NATIONAL PETROLEUM NEWS

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Oil Board to Inquire Whether Cracking Patents Restrict Gasoline Yield

By Telegraph from A. E. Heiss, Staff Writer

WASHINGTON, Oct. 12

THE Federal Oil Conservation Board it is understood, will enlarge the scope of its second report, to include an intensive inquiry as to whether the cracking patent situation is playing a part in restricting the use of cracking equipment by Independent refiners and resulting in a consequently smaller yield of gasoline than could be obtained by wider use of cracking facilities.

A formal announcement was made by the board yesterday as follows:

"The President's Oil Board is studying new and important data relating to the general problems of the oil industry and it was stated today additional observations and recommendations will be included in the board's second report which is expected to be completed about the first of the year."

It is understood from sources outside the board itself that the "new and important data" concerns itself chiefly with the cracking situation. Several Independent refiners have brought to the attention of the board their views concerning the situation, expressing the opinion that universal cracking of heavy oils is an economic necessity if the nation's petroleum resources are to be used to the best advantage and that universal use of cracking by the smaller refiners has been retarded by the claims set up by members of the Patent Club and others to the ownership of exclusive patents on various phases of cracking.

It is significant that the announcement of the board was made on the same day that hearings were resumed in New York in the suit brought by the United States government against the members of the Patent Club charging that the action of the club members in putting conditions of marketing in the cracking license contracts on which they permitted Independent refiners to use their various processes constituted illegal restraint of trade.

One branch of the government's suit also aims at annulment or rescission of the Adams patents owned by The Texas Co. charging that the patents were obtained through the practice of fraud upon the patent office.

One of the Independent refiners who gave the Federal Oil Board his views on the effect exerted on the Independent refiners' operations by the Patent Club and other owners of cracking patents, was C. J. Holland, assistant to the president of the American Refining Co., Wichita Falls, Tex. His letter to the board was published on page 23 of the Aug. 18 issue of National Petroleum News. Mr. Holland, after giving tabulated figures on gasoline requirements, and on the cracking capacity of the plants using the various processes in use, summed up his views as follows:

"We find that of the 20 processes (meaning those most generally used) exactly one-half represents 92 per cent of the total capacity and is owned by seven companies, Standard Oil Co. of Indiana, Standard Oil Co. of New Jersey, The Texas Co., Gasoline Products Co. (Cross) Gulf Refining Co., Sinclair Refining Co. and Universal Oil Products Co. (Dubbs).

"In order for the small companies to make use of these so-called processes they must pay royalties to one or more of the seven large companies named. This situation necessarily restricts cracking plant operation and consequently has a decided effect on price of gasoline to the consumer. The small refineries often do not feel justified in erecting cracking plant equipment; first, on account of expensive royalties and second, danger of lawsuits .....

"It is sometimes said that the payment of 10 or 15 cents a barrel royalty charges by small companies for operating one of the so-called processes is not a burdensome charge; that it would not affect the price of gasoline to the consumer a fourth or even an eighth of a cent a gallon. It is quite true that this royalty payment is a small percentage of total operating expenses. Nevertheless, it is often these small things that very greatly effect the selling price of commodities. For instance, a small refiner running 5000 barrels a day of crude will have an operating expense of around $3000 per day if he is obtaining (which he should do) a 50 to 60 per cent yield of gasoline. To do this he will have a cracking plant of about 3000 barrels daily capacity. If his royalty charges average 12½ cents a barrel, this will be $375 a day, or about 12 per cent of his total operating expenses."

The announcement of the board is hazy but it is understood that it is going thoroughly into the situation created in the industry whereby the small refiner, according to information given to the

All In Day's Work

ABOUT the busiest person at the Tulsa meeting of petroleum engineers this week was A. F. Hinton, staff writer for National Petroleum News at its Tulsa office. In addition to covering the proceedings for this publication, Mr. Hinton had duties as secretary of the Tulsa chapter of the Petroleum Division of the A. I. M. E. Besides that he was on the program for Oct. 12 to give a paper based on his observations in the Panhandle field, and was also called on to help with the general arrangements for holding the sessions.

board, is really penalized for carrying conservation to its limit, that is, obtaining the greatest possible amount of motor from every barrel of crude he runs, through enforced payment of cracking royalties.

It is understood that the theory upon which the board will proceed to a study of the cracking situation is that the public interest requires the use of cracking processes by all refiners to the end of obtaining the greatest possible yield of gasoline and that the payment of excessive royalties, or of any royalties unless the patents under which they are collected are found to be unquestionably valid, are unwarranted charges upon the public; also that retarding the use of cracking processes to the fullest extent by threats of suits for infringement against refiners who put in cracking plants of any sort without paying royalties to one or other of the cracking patent owners, is against the public interest.

Without mentioning the cracking situation specifically, the Board's announcement goes on to say:

"Since the completion by the board of its first report dealing with general conditions in the oil industry, many suggestions and new data have been submitted by representative oil men which contribute informatively to the study the board is making. In rendering to the president the second report, it was said to be likely that the board will deal with certain collateral issues bearing on the general problems of the industry, problems which are arising constantly and which naturally have a bearing upon the national petroleum policy as it affects government and public oil lands."

Trade Commission Begins Inquiry Into Panhandle Conditions

Staff Special
Cleveland, O., Oct. 11.

ACTING upon the complaint of a public official, identity not revealed, the Federal Trade Commission has directed T. A. Carroll, of its staff, to make a complete investigation of conditions in the Panhandle, Texas, oil field.

The nature of the complaint is not made known. The trade commission treats as confidential all representations and the names of those making them until it lodges formal complaint. Those familiar with Panhandle field conditions say that some operators are responsible for the interest displayed by the unnamed public official. That official, it is believed by some oil men is Dan Moody, attorney general of Texas, who is certain to be elected governor of Texas at the coming election.

Furthermore, while the commission has not said just what the complaint is, oil men of the Mid-Continent are generally familiar with the conditions which brought on the trouble. There is no pipe line outlet from the field to trunk line connections, all oil moved out being handled by tank cars. During the summer, priority was given by the railroads to grain shipments, the bumper wheat crop creating a second distress condition in the Panhandle. In July, for example, nearly half of the total production went into storage. The excess of production over shipment has not been helped lately by the increase of production over refinery demand for the oil. Along with the steady gain in the Panhandle, where output is now near the 150,000 barrel daily mark, increases in other districts that are served by trunk pipe lines have worked against the market for the Panhandle crude.

Market Not Well Settled

AS has been the case with many fields remote from existing trunk lines and from refining centers, market for the oil has been somewhat uncertain in the Panhandle. The field's development has been principally within this year. For several weeks after the big development started and the output started its climb, there was no posted price by major buyers. Even now the Prairie Oil & Gas Co., dominant Mid-Continent purchaser, has no posted price although it is in the field as a buyer. It buys from a limited number of producers at the highest price paid by either the Humble Oil & Refining Co., the Gulf Production Co. or the Magnolia Petroleum Co. The Sinclair Crude Oil Purchasing Co., another major purchaser, is not in the field. Next in rank as a purchaser posting a price, to the three companies named, is the Kay County Gas Co. (Marland).

The latest source of dissatisfaction in in the Panhandle was the posting of a flat price of $1.25 by principal purchasers, replacing the gravity schedule. One of the reasons for this, according to a purchaser, was the difficulty of taking the gravity of the oil. Panhandle district crude congeals at a fairly high temperature and according to the purchaser there have already been days this fall when hydrometer readings could not be taken. His expression was that it was impossible "to get anything but a spade into the oil."

No Trunk Line This Winter

THERE will be no pipe line relief for the district this winter. One trunk line, that of Prairie Pipe Line Co., is under construction. Material is being shipped, although the work of the right-of way men has not been completed. A tentative date set for the completion of this line at the time it was announced several weeks ago was Feb. 1, but it is now believed that it will not be finished by that time.

As pointed out elsewhere in this issue, natural conditions will probably bring about a partial shut-down in the field soon. It is not believed that the operators will be able to maintain anything like the present production when the cold weather hits the Panhandle.

Investigator Carroll was in the Mid-Continent field conducting inquiries in the gasoline investigation which the trade commission has under way when he was assigned to the Panhandle work. He is a veteran government investigator and has handled oil questions from the time the old Bureau of Corporations was established, which was prior to the creation of the Federal Trade Commission.

RED WING, MINN. — Standard Oil Co. of Indiana has completed a service station here.

Index To Coming Meetings

Petroleum Division, American Institute of Mining and Metallurgical Engineers, Tulsa, Oct. 11-14.

Illinois Petroleum Marketers Association, Pittinger Hotel, Centralia, Ill., Oct. 13.

Petroleum Section, National Safety Council, Detroit, Mich., Oct. 25, 26, 27, 28, 29.

National Petroleum Marketers Association, Atlantic City, Oct. 26, 27, 28.

Safety Council, Tuller Hotel, Detroit, Mich., Oct. 26, 27, 28.

Virginia Independent Oil Men's Ass'n., Richmond, Va., Nov. 10.

American Association of Petroleum Geologists, New York City, Nov. 15, 16, 17.

American Oil Men's Association, Congress Hotel, Chicago, Nov. 16, 17, 18.

Wisconsin Independent Oil Jobbers' Association, Hotel Lorraine, Madison, Nov. 17.

Texas Independent Oil Men's Association, San Antonio, Nov. 18 and 19.

Rocky Mountain Oil & Gas Association, Montana Chapter, Great Falls, Mont., Dec. 1, 2, 3.

American Petroleum Institute, annual meeting, Mayo Hotel, Tulsa, Dec. 7, 8, 9.

Michigan Independent Oil Men's Association, Detroit, Feb. 10 and 11, 1927.

American Oil Burner Association, Broadway Auditorium, Buffalo, N. Y., Apr. 5, 6, 7.

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Production Engineers Meet to Trade Information on Field Practices

By Telegraph from A. F. Hinton, Staff Writer

Tulsa, Oct. 12

OPERATORS and engineers noted several months ago statements of Henry L. Doherty that an important fundamental principle had been discovered by research men in his company. Many of them heard today a detailed presentation of this principle by two of the men who did the work.

This was at the fall meeting of the petroleum division, American Institute of Mining and Metallurgical Engineers, in session here Oct. 11-12. The exponents of this principle, asserted by Mr. Doherty to prove eventually to be of incalculable importance in recovering the oil left in the sands, were Charles E. Beecher and I. P. Parkhurst, production engineers with the Empire Companies, Bartlesville, Okla.

As stated originally by Mr. Doherty, long investigation had established that oil in an undisturbed pool is different in character than that same oil raised to the surface. Also, it is different in behavior. If methods can be worked out to keep in solution the gas that is in solution in the oil originally, it is probable, Mr. Doherty said, to increase vastly the recovery.

It was this contention and the theories of surface tension, viscosity, etc., surrounding the principle, that Messrs. Beecher and Parkhurst explained, giving extensive discussion as to the manner in which they had arrived at their conclusions.

Standing room only was the order of the day at the first sessions today of the meeting of the Petroleum Division. The large auditorium of the Municipal building, in which sessions were held, proved totally inadequate to provide seats for all oil men who desired to listen to the papers and take part in the discussions that followed. This resulted in a fringe of spectators standing around the outfield and made ground rules necessary. The same condition applied at the luncheon at Hotel Mayo. The long tables provided for guests were quickly filled and the overflow necessitated the hurried placing of a number of extra tables.

The nature of the program with the prominence in the industry of the speakers assigned to cover these subjects, in which they have specialized, was sufficient to bring petroleum engineers from other oil producing territories to the meeting, in addition to the large membership of the institute in Tulsa and the vicinity.

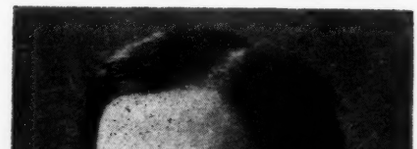
F. Julius Fohs, of New York, chairman of the petroleum division, under whose guidance the program was assembled and the meeting held, presided at today's sessions as well as at the luncheon. His right hand man was Alf Heggem, president of the Oil Well Improvements Co. Tulsa, who is general chairman on arrangements. T. E. Swigart, Shell Co. of California, who was chairman of the program committee, was unable to attend.

Calls for Discussion

IN calling the meeting to order, Mr. Fohs urged that all those present who were interested in the subject under discussion give their views and the results of their experience. He stated the purpose in the formation of the petroleum division was to offer a forum open to all for discussion of petroleum production problems. He was eloquent in describing the difficulties attendant upon the search for the elusive petroleum, saying "Nature must be wooed constantly if she is to be persuaded to yield up the riches hidden in her loins." He said he is not an alarmist, in that he does not believe that all the oil in the ground has yet been found, but he pointed out that success is becoming increasingly difficult of attainment in the search for new fields, and the industry must depend more and more upon scientific methods both in this search and in obtaining the greatest recovery from both old and new fields.

L. L. Brundred of the National Supply Co. of Texas, was the first speaker on the program. He discussed the theory of flow of oil through various producing formations in normal production and also went into the theory and methods of introducing gas or air into the sand to increase recovery. He described the passage of oil through a sand, when gas pressure is sufficient to flow it out of the well, as the formation of a series of minute bubbles of gas over which is a film of oil and stated that oil does not move through the sand in a solid wall.

NEXT week's issue of National Petroleum News will contain other important papers delivered at the Tulsa meetings of the Petroleum Division of the A. I. M. E., also the complete account of the procedeings at the sessions Oct. 12, and a detailed description of the field trip through Oklahoma being taken by the engineers Oct. 13 and 14 to see first hand conditions and equipment discussed at their meeting.



F. Julius Fohs, chairman, petroleum division, A.I.M.E., oil producer and geologist.

As the gas pressure diminishes fewer of these tiny bubbles are formed, the oil moves more slowly toward the well and the well finally ceases to flow when the gas pressure is no longer sufficient to flow the gas into the well and to the surface.

Theory of Use of Air or Gas

HE described the theory of using air or gas under pressure and introducing it into the oil sand as an artificial restoration of rock pressure, and stated that, when this method is used, the gas or air acts upon the oil in much the same manner as did the original gas contained in the sand with the oil. He pointed out that these artificial expulsive agents passed through the richest portions of the oil sand, as the sand remains more saturated as the distance from the producing wells increases, and that it, therefore, tends to recover a great deal of oil left in the sand as the original gas pressure was dissipated. He concluded by stating that, in view of the importance of maintaining the rock pressure of a field as long as possible, preventable waste of gas is little short of criminal.

S. F. Shaw, consulting engineer of San Antonio, Texas, and generally recognized as an authority on gas lift in oil wells, was the next speaker. He told of having been retained by the Roxana Petroleum Corp. to do experimental work on some of their wells and what was done in the Braman, Garber and Tonkawa fields of Oklahoma and

in the Oxford field of Kansas. He gave detailed figures on wells before and after installation of gas lift, together with gas-oil ratios, pressures, depths of well, size of tubing and other features. He also showed slides depicting recommended methods of fitting up wells for gas lift, position of gas trap with reference to well, and so forth.

The full paper delivered by Mr. Shaw appears in this issue, starting on page 63.

This paper was highly interesting and very timely, because many gas and air lift installations are now being made in the Mid-Continent field, and reading of the paper was followed by general discussion. D. K. Hutchcraft, of Clark Bros. Gas Engine Co. of Tulsa, told of his experience with air lifts for water wells, which he said offered problems similar to those met in oil wells. He urged oil producers to make close study of well and field problems in order that they might provide the right compressor for the job in hand. He said compressors were frequently called upon to do work for which they were not designed. He also called to the engineers' attention the feasibility of providing a battery of compressors for supplying air as probably being a better arrangement than that of installing a compressor for each well. Through the use of a device made by the Foxboro Co. he said gas or air could be delivered to individual wells in varying pressures according to the need of each well.

R. P. McLaughlin of California had prepared an interesting discussion on the Shaw paper, but was delayed by a train wreck and failed to get to the meeting. His discussion was read by Sidney Powers, of the Amerada Petroleum Corp., Tulsa. Hollis Porter, chief production engineer, Gypsy Oil Co., Tulsa, also discussed Mr. Shaw's paper. R. S. Knappen, geologist, Gulf Oil Corp., Pittsburgh, made the interesting observation that the use of an air lift is very helpful in fields where loose sand accumulates in the bottom of hole and wears out valves and cups rapidly. He cited cases in Venezuela where valves and cups had to be renewed every three days on account of being ground out by sand, but when an air lift was used, this loose sand was blown out of the hole and the equipment would last a month or longer.

Change Method of Nomination

FOLLOWING the discussion on this paper, the meeting adjourned for lunch. At discussions following luncheon it was decided to revise somewhat the methods used to nominate officers of the petroleum division, in order to give members generally more opportunity to express their preference. Another plan put under way was that of fostering formation of petroleum clubs in cities where there are not sections of the Institute and no regular meetings of the section of the petroleum division. It was pointed out by Chairman Fohs that interested persons could join these clubs without necessarily becoming members of the institute. A committee was appointed to look into the matter of organizing these clubs in various Mid-Continent cities.

Alf G. Heggem president of the Oil Well Improvement Co., Tulsa, and general chairman of arrangements for the meeting of the Petroleum Division, A.I.M.E., held in Tulsa this week. (Photo by J. L. Rivkin, Tulsa.)

First official speaker in the afternoon was C. E. Beecher, who, in collaboration with I. P. Parkhurst, had prepared an important paper on "Effect of Gas Upon Viscosity and Surface Tension of Crude Oil." Both authors of this paper are production engineers with the Empire Gas & Fuel Co. of Bartlesville. The purpose of the paper was to prove or disprove the contention made by Henry L. Doherty, head of the Empire interests, some time ago that oil in an undisturbed pool is different in character and behavior from the same oil raised to the surface, and that the gas dissolved in the oil caused a marked reduction in its viscosity and surface tension.

Effect of Gas on Oil Viscosity

MR. BEECHER stated that no information to support this contention could be found in the literature of petroleum prior to 1924 and that, as far as known, no experimental work had been carried on to prove Mr. Doherty's claim. It was therefore necessary to devise equipment and carry on experiments independently to settle the matter. His paper was prepared to describe the experiments and the results obtained, which he stated proved the contention of Mr. Doherty in every particular. His paper, which was profusely illustrated with slides showing experimental equipment and curves giving results, was followed with close interest and looked upon as bringing out something entirely new in petroleum research. The application of this subject to practical production problems was brought out in one paragraph of the paper as follows:

"Viscosity is the most important physical quality of oil which retards its flow through a pipe line or through the small irregular openings of the average oil sand. Therefore, if some method of producing oil can be devised such that a major portion of the gas will remain in solution and the oil retain its fluidity, it is possible that the volume of oil recovered from the sands can be greatly increased.

Results of Experiments Given

"THE surface tension of crude oil is reduced by dissolved gas. Results of experiments with two different crudes saturated with gas at pressures of from 400 to 500 pounds indicated a reduction of approximately 20 per cent in the surface tension of the oil. Many of the small openings in an oil sand are of capillary size and hold a large percentage of the oil which is not recovered by present production methods.

"As the dissolved gas escapes from the oil the surface tension increases and likely the capillary force which holds the oil within the sand. We are not prepared to say that surface tension is the only factor that holds the 80 per cent of the original oil in the sands. If, however, surface tension should be the only force and if, by keeping the gas in solution, the surface tension could be reduced 20 per cent then we might expect an 80 per cent greater recovery from the sands."

There was considerable discussion of this paper, some argument developing as to whether flow through a sand was of a viscous or turbulent nature, the consensus of opinion inclining to the former. Comments were made by

New Method for Depletion on Gasoline Plant

(Oct. 20th Issue)

A METHOD for computing depletion and depreciation on natural gasoline plants which allocates them to a flat cost on each gallon of gasoline produced will be described in the Oct. 20th issue of National Petroleum News by a Tulsa appraisal engineer who has carried on work along this line for some of the major gasoline producing companies.

It was found that the future gasoline content of gas could be predicted to a reasonable degree of accuracy, and a plant efficiency factor was set up which allowed for the decreasing efficiency of the plant as the machinery and equipment aged, which factors, together with the setting up of future gas recovery, which is now generally done, allows the working out of a unit cost system, similar to that employed in other manufacturing lines.

James O. Lewis, Dunn-Lewis Oil Recovery Corp., Tulsa, H. C. O. Clark, chief production engineer, Pure Oil Co. and John R. Suman, of the Rio Bravo Oil Co. Houston, who read a discussion written by H. L. Edwards of the Humble Oil and Refining Co. and J. R. McWilliams, Skelly Oil Co. Tulsa.

C. V. Millikan,, production engineer for the Amerada Petroleum Corp. Tulsa, spoke next on "Gas Oil Ratios as Related to Decline of Oil Production." His paper, plentifully illustrated with slides, showed as a general thing the gas-oil ratio tends to increase as production declines. He presented a number of curves illustrating this tendency. During discussion of this paper, Dr. W. A. S. M. Van Waterschoot Van Der Gracht, director of Marland Oil Co. stated that, in his opinion, study of gas-oil ratios should concern itself more with the kind of gas and the manner in which it occurs, as these factors have important bearings on the study of well efficiency. Several other speakers told of experiments and observations on gas-oil ratios in various fields throughout the country.

Mr. Lewis was next on the program, reading a paper written by himself and I. L. Dunn, of the Dunn-Lewis Oil Recovery Corp., on the advantages of unit operation of oil fields. Mr. Lewis opened by saying he was prepared to set forth some of the advantages to be obtained through unit operations, but that he was unable to make any suggestions as to how unit operation might be brought about.

The full paper delivered by Mr. Lewis appears in this issue, starting on page 58.

Interest aroused by this paper was indicated by the amount of discussion that followed it. James H. Gardner, president Gardner Petroleum Co., Tulsa, and former president of the American Association of Petroleum Geologists, spoke of the desirability of unit operation if it could be brought about, and told of a tendency now noticeable among some of the larger companies to take first steps in this direction by doing prospecting work on a cooperative basis. He said that at last two wildcat wells are now being drilled in Oklahoma on a cooperative basis where four or more companies have pooled their interests in leases in the vicinity and plan to prorate costs of the well as well as the proceeds if any.

Earl Oliver, consulting engineer of Ponca City, stated that he concurred heartily with all of Lewis' statements. He said that discussion of the unit operation "has generated more heat than it has light." Mr. Lewis then presented a paper on "Economic Effect of Increased Methods of Recovery Applied to New Pools," after which the meeting adjourned.

Code on Care of Equipment is Planned

TULSA, Oct. 11

THE use and care, in the field, of oil country equipment is to be taken up by the American Petroleum Institute committee organization on Standardization as the logical sequence of its work in drafting specifications for the manufacture of the equipment.

Before this work is completed it is hoped there can be issued a code of accepted oil field practice in the use and care of equipment which will be as highly regarded by oil company field officials in charge of drilling and producing operations as have the Institute committee specifications by the manufacturers and their representatives.

This announcement as to plans for future activity on the general standardization program came from Carl A. Young, standardization director for the Institute, with headquarters in Dallas, who was in Tulsa last week arranging with Secretary R. L. Welch and W. R. Boyd, Jr., assistant secretary of the Institute, both from New York, details of the program for the coming Institute convention in Tulsa.

"Several papers are to be read at this meeting on the proper care and use of equipment in field use," said Mr. Young. "It is hoped that these papers and the discussion they will probably evoke will be the nucleus of a code on recommended field practice, which we can eventually include and publish with every standard specification."

First suggestion for carrying the Institute work into the use of equipment in the field came in the semi-annual standardization meeting at Colorado Springs last June, when several who have been active in standardization work brought up the question as to what steps were to be taken to show the oil company man or drilling contractor in the field how to use the standardized equipment.

REPRESENTATIVES of manufacturers on the various standardization subcommittees had anticipated this to some extent by drawing up suggestions for the proper use of their particular line of equipment as the preparing of specifications proceeded. They felt that, while considerable saving could be made through the standardization program by itself, an organized program would have to be carried on to show the field men the best methods in which to use the equipment, with a view to longer life, better results from its use and so on.

The same committee personnel which has carried on the standardization work so far is to take up this new phase of the work, according to Director Young. This consists of hundreds of men in the production branch of the industry, and representatives of maufacturers and the oil field supply companies divided into committees on the various classifications of oil field equipment, and each of these further divided into territorial sub-committees. These men have worked together successfully to draw up the standard specifications and can easily carry on this new activity, it is believed.

As a matter of fact the task has already started, of laying what the Institute has done in drawing specifications before the men in the field who superintend the use of equipment, or even actually themselves do the work that entails its use. Director Young is having published in a pocket size, loose leaf binder, the various specifications which are now either adopted or tentative, and they are available to the field men at a very low price. A man orders the cover and only such specifications as he is actively interested in.

Will Keep Books Up to Date

MR. YOUNG keeps a record of all individuals to whom sets of specifications are issued in this form and they are sent any additional information the Institute can offer. His plan is to send out also whatever valuable information on the care and use of equipment the Institute is able to work up, so that the field man will have always with him the specifications and the code of practice for its use.

For example, recommended practice in taking care of wire rope has already been placed before the industry in the reports of the committee on this subject, of which C. C. Scharpenberg, Standard Oil Co. of California, is national chairman. This will be followed later by recommended practice as to how to best use and preserve oil field belting, among other materials.

The cable drilling tool joint committee, headed by Thomas Fleming, Jr., of the Oil Well Supply Co., reported on best known methods for making certain field repairs to this class of equipment.

Correction

In the Teapot Dome story in Oct. 6th issue of National Petroleum News it was erroneously stated that the investigation by congress of the letting of the contract to the Mammoth Oil Co. to develop Teapot Dome led to the resignation of former secretary of the interior Albert Fall and former attorney general Harry Daugherty.

The facts are that Fall resigned before the investigation by congress started and Daugherty had nothing to do with the naval reserve lease matters. It was former secretary of the navy Edwin Denby who resigned after the investigation had started.

Panhandle Operators Discuss Shutdown To Protect Crude Market

By A. F. Hinton
N. P. N. Staff Writer

TULSA, Oct. 9

WITH production in the Texas Panhandle approaching the 150,000 barrel mark and showing no signs of slackening, it is probably an excellent thing for the industry that winter is just around the corner, for it seems that severe cold weather on the Staked Plains will do more toward bringing about an ebb in the flow of Amarillo crude than any amount of discussion or agreement on the part of operators. While there is undoubtedly a sentiment among Panhandle producers—at least among the larger companies—that it would be an excellent idea to cut down on drilling wells and to hold back production as much as possible, all followers of the producing section of the industry know that such a sentiment seldom crystallizes into definite action.

The shut-down sentiment has taken the form of neighborly discussion between offsetting lease owners, in which one party will say: "I won't drill this one if you'll not drill that one", and there are of course, only comparatively few cases where such an agreement as this can be worked out with mutual satisfaction. Few, that is, compared to the large numbers of locations that must be drilled to protect property lines and to comply with lease conditions. In general, most shut down movements sag down because each operator desires to be allowed to drill all his wells while the fellow across the fence hangs up his tools, and there have been but few instances in the Mid-Continent field where shutdowns actually were agreed upon and put into effect.

The fact that Panhandle operators, especially those whose interests are not confined to that locality, and who are interested in maintaining the industry's prosperity and comparative stability, are thinking that it would be a wise thing if operators could be curtailed and production held back until spring, indicates that they see a menace to the crude price structure in the district's mounting output. The reason for this feeling that a flood of Panhandle oil might well upset crude market conditions is traceable not so much to the fact that a great deal of oil is being produced, but chiefly to the present low price prevailing in the district.

With large quantities of this crude being produced and available at $1.25 a barrel, with average freight rates of about 45 cents a barrel, the danger is apparent that enough of it might find its way into the hands of bargain-seekers to cause a backing up of Mid-Continent crude, bringing about a condition where the flow of Oklahoma and Kansas crude will be into storage. It is believed that such a condition would almost inevitably bring about a reduction in the price of Mid-Continent crude.

However, it is comforting to reflect that, while there is a large movement of crude out of the Amarillo district in tank cars, by far the greater portion of it is consigned to refineries operated by the companies that produced the oil. That part of it thus disposed of has little, if any, effect on the crude market situation. The danger is that crude buyers looking for cheap oil may go into the open market and move out large quantities of Panhandle crude in preference to their ordinary sources of supply in the Mid-Continent and elsewhere. The amount that can be moved out in this manner, however, is contingent upon the physical ability of the railroads to handle it, and that is necessarily limited to the facilities available.

Aside from the Panhandle, the only menace to the Mid-Continent crude market is Seminole, a field which is now producing 39,000 barrels daily, and which is certain to produce much more than that before finally reaching its peak. Estimates as to what it will ultimately produce run all the way from 70,000 to 200,000 barrels daily. The wide variance in these estimates indicates that at best they are guesses, as not enough wells have been completed to give a fair idea of the field's ultimate area. It would not be surprising if a large number of dry holes are included among the wells now drilling as the field is one of greatly varying sand thickness and variations in depth to productive horizons or to horizons which should be productive. Also, it is likely that water intrusion will occur, and it is a characteristic of Wilcox sand fields that the wells fall off very rapidly after water makes its appearance.

This is one time when one man's guess is as good as another's as to what course the crude market is going to take in the immediate future. Some who are close observers of the industry believe that crude will be cut as soon as Seminole gets up to 50,000 barrels a day, if it still shows signs of going higher, while others equally well-informed and observant believe that field could go to 100,000 barrels without disturbing the market situation. Some expect crude to be cut soon, while others do not look for it to be changed at all during the current year. Time will tell, assisted by Seminole and the Panhandle.

* * *

Related to the foregoing discussion by Mr. Hinton of the thought among Panhandle operators that curtailment of development should now be practiced is the fact of the investigation now under way by the Federal Trade Commission. It is unlikely that anything will come immediately of this, for the commission, as now constituted, is not given to the exercise of snap judgment and to the formulation of orders based upon that kind of judgment.

There has been a certain amount of distress in the field, it is true, but it is not the kind that came without warning. It was apparent to all for months that with no trunk pipe lines under construction no quick relief could be had for the condition that was being established. Further, it was apparent that a big drilling campaign was the thing that would bring on the distress, for the wells were small in production as compared to many other fields that went through the same thing in the history of the industry.

Production in the Texas Panhandle district, for week ending Oct. 9, 1926:

County	No. Wells	Production
Hutchinson	424	133,859
Gray	19	5,943
Carson	55	4,051
Wheeler	9	325
Potter	1	35
Total	508	144,213

Average production per well, 283.9 barrels.

I.C.C. May Consider Estimated Shipping Weights in General Investigation

By J. C. Chatfield
N. P. N. Staff Writer

"WEE WILLIE" SHERDEL lost a heart-breaking game featuring the closing day of the St. Louis hearing of the Interstate Commerce Commission's general investigation into petroleum freight rates east of the Mississippi river.

The previous day was featured by representatives of the Indiana State Chamber of Commerce on the witness stand and the mighty "Babe" Ruth at bat. Whatever may be the result of the testimony on freight rates it is a well known fact that the Bambino swung his willow with such devastating effect that two balls left Sportsman's park over the garden wall and a third was safely parked in the bleachers.

It should not be assumed from the remarks above that the events chronicled above took place simultaneously. On the contrary Examiner John B. Keeler, commerce counsel for the various interested shippers, receivers and carriers, witnesses and others in attendance, found no difficulty in agreeing at the opening session that all hearings would begin at an early enough hour in the morning to permit the completion of the regular five hours of testimony before 1 p. m. Probably it should not be necessary to record that all hearings closed promptly on time.

Due to the illness of Ed. P. Byars, representing certain shippers in Texas, the Fort Worth hearing scheduled for Oct. 15 has been cancelled and the Tulsa hearing will be opened on that date. The Tulsa hearing is expected to consume more than a week in view of the large volume of testimony which has been prepared by Mid-Continent refiners to support their plea for through, one-figure freight rates to eastern territory.

Cross examination of E. W. Seiboldt, Roxana Petroleum Corp.'s witness and A. T. Sindell, witness for the Manhattan Oil Co. of Kansas City, was deferred by James F. Lawrence, counsel for Oklahoma refiners, and will be conducted at the Tulsa hearing.

Estimated Weight Question

ALTHOUGH it was announced by the examiner at St. Louis that it would be proper to introduce evidence regarding the propriety of estimated weights of petroleum products, no effort has been made to inject that element into the case thus far. It appears probable, however, that the question may be brought up at the Tulsa hearing.

Manufacturers of natural gasoline in the Mid-Continent field have felt for a number of years that they have been paying too high a rate for their product due to the fact that they pay on a basis of 6.6 pounds per gallon while the actual average weight of the commodity is about 5.5 pounds per gallon. It is reported that the Phillips Petroleum Co. may bring in testimony to show that the estimated weight of natural gasoline should be lower than for refinery products.

No other shippers of petroleum products appear to be interested in opening up the weight question. On the contrary there appears to be some opposition to opening up the subject again, particularly among refiners east of the Mississippi.

It is a well known fact that refiners east of the Mississippi ship heavy oils on the same estimated weight as they ship the light oils, 6.6 pounds per gallon. In western territory the estimated weight of light oils is 6.6 pounds and that of fuel oil and gas oil 7.4 pounds per gallon.

Lower Weight No Advantage

AT first glance it would appear that refiners east of the river have a big advantage over the western plants because of the lower estimated weight. This is not the case, however. Heavy oils west of the river have had rates fixed well below the level of light oil rates. The rate has been about 6 cents per 100 pounds under gasoline in a majority of cases. The Interstate Commerce Commission has ruled in the Mid-Continent (1925) rate case that 80 per cent of the refined oil rate is a reasonable basis for heavy oil rates.

East of the Mississippi refiners have had lower weights but the same rates. On that basis they are paying 89 per cent of the refined oil freight bill on heavy oils. It will be seen that as a matter of fact the eastern refiners would benefit by a change in estimated weights and a fuel oil rate 80 per cent of refined oils.

Since Mid-Continent refiners are asking for through, one-figure rates to territory east of the Indiana-Illinois state line it has been suggested that possibly the difference in estimated weights will be involved necessarily. Thus far it is not clear what the attitude of various interests will be.

There has been some discussion in railroad circles recently of the setting up of estimated weights for various commodities all up and down the line. Suggestion has been made that actual weights might be used instead of present estimates.

As far as could be learned from discussion of the subject with both carriers and shippers at St. Louis, no one wants to see actual weights brought into the picture. Shippers take the position that they would be put to a great deal of expense in installing scales at their refineries and that clerical work would be exceedingly involved.

Railroad representatives at the hearing brought out the point that the task of policing actual weights by checking shippers' figures would be an expensive and involved proceeding. They believe that present estimates are fair and have no desire to run up their transportation costs.

Weights Too High

AN investigation of estimated weights on the basis of present shipping and refining practise might show that present weights are too great. Production of gasoline has been increasing rapidly in recent years at the expense of kerosene, distillates, gas and fuel oil. The average weight of refinery gasoline is well below 6.6 pounds per gallon and the production of kerosene is now a much smaller percentage of the total shipments of light oils than a few years ago.

The same is true of lubricating oils. In the case of lubes, refineries send out large amounts in barrels and other packages and pay on an actual weight rather than on an estimate. Consumption of lubricating oil has not grown as rapidly as the consumption of gasoline.

It has been suggested in some quarters that the weight question might be clarified if the commission fixed a definite dividing line between light and heavy oils. One suggestion has been that all oils above 36 gravity take the light oil rate and all oils below 36 take the heavy oil rate. Aside from the shippers of natural gasoline, however, the general attitude is that present weight estimates are fair to both shipper and carrier and should not be disturbed.

Kansas City Rate Request

AT the final hearing at St. Louis A. T. Summerwell, traffic manager for the Manhattan Oil Co. (Kansas City Refining Co.) presented a petition through Witness A. T. Sindell, asking for rates to the east with a proper relationship between Group 3 and the Mississippi River refiners. This company hopes to obtain a differential over St. Louis half as great as any differential of Group 3 over St. Louis which may be prescribed by the Commission as a result of the present investigation.

As reported in this publication a week ago Roxana Petroleum Corp. asked a reduction of 15 per cent in its local rates from East St. Louis to territory east of the Indiana-Illinois line which would amount to the same thing as a restoration of Group 3 rates on the basis of a full combination of the local rates from Group

3 to St. Louis and from St. Louis on to the final destination.

Roxana complained that rate changes since June 24, 1918, have tended to destroy the advantage which was held by the company when it built its refinery east of the river at Roxana, Ill. The following tabulation, Table No. 1, shows rates in cents per gallon from Roxana to Indianapolis and Group 3 to Indianapolis for the past eight years:

Rate to Indianapolis on Gasoline in Cents Per 100 Pounds

Date of Change	From Roxana	From Group 3
June 24, 1918	15½	35½
June 25, 1918	19½	44½
July 18, 1918	20	40
Aug. 26, 1920	28	54
Jan. 1, 1922	24½	53½
July 1, 1922	24½	50
July 13, 1922	24½	49½
May 25, 1925	24½	42
Feb. 20, 1926	24½	42
Mar. 5, 1926	22	42

The competitive effect of freight rates on fuel oil in the steel business was clearly portrayed to the Examiner by S. S. Shambaugh of the Kokomo Steel & Wire Co. He stated that from July 1, 1925 to June 30, 1926 his company purchased 639 cars of fuel oil in the Mid-Continent field and paid a freight rate of 6 cents per hundred pounds over the rate from Group 3 to Chicago. His freight bill was thus $24,713 greater than if he had been shipping to Chicago although Kokomo is only 697 miles from Tulsa while Chicago is 701 miles from Tulsa by the Santa Fe and 708 miles by the Frisco.

Mr. Shambaugh testified that his excess freight bill for the year amounted to 1.2 per cent on the capitalization of the company and constituted a handicap which was difficult to overcome due to the intense competition with Chicago steel companies since the abolishment of the Pittsburgh Plus method of basing prices.

P. H. Banks and B. H. Anglin were witnesses for the Indian Refining Co. Mr. Anglin asked on behalf of his company that rates from Lawrenceville should be placed 24 to 30 cents per hundred under the rates from Group 3 to destinations east of the Indiana-Illinois line.

Program Features Announced for N.P.M.A. Meeting

CHICAGO, Oct. 11

CLOSING of a deal on Monday morning whereby T. A. Peck of St. Louis becomes head of the lubrication engineering department of National Petroleum Marketers' Association added the name of one more nationally famous speaker and technical man to the program of the annual convention in Atlantic City, Oct. 26, 27 and 28. Mr. Peck takes the place in the organization recently vacated by Sam Hunt.

T. A. Peck comes from the position of chief lubrication engineer with the Pierce Petroleum Corp., St. Louis, which he has held for a number of years. He became popular in the oil industry as an orator in March, 1925, when he addressed the spring convention of the American Oil Men's Association in Kansas City. His address on automobile lubrication on that occasion has been described as highly informative, easily comprehensible and funny. It created so much favorable comment at the time that Col. Peck has since complied with many requests to speak, and has declined many more. Before becoming identified with the Pierce organization he was eight years with the Vacuum Oil Co.

Most Important Meeting

PRESIDENT L. V. Nicholas of the N. P. M. A. is today mailing out the final literature to the association, having to do with the Atlantic City convention. He describes the meeting as the most important gathering of Independent oil men ever held. "This is the first national gathering of oil men held in the east for 20 years, and West will meet East on the Steel Pier for their mutual profit-making advantage," he says.

One of the most conspicuous features of the N. P. M. A. convention is the work of the Association of Natural Gasoline Manufacturers and the part taken by Dr. G. G. Brown, professor of chemical engineering, University of Michigan. Financed by the A. N. G. M., Dr. Brown is conducting a thorough investigation of the anti-knock properties of natural gasoline. The work is in progress at Ann Arbor, under the auspices of the university. Dr. Brown's first appearance before a gathering of oil men was last July on Mackinac Island, Mich., before a convention of Michigan jobbers.

A. V. Bourque, secretary of the A. N. G. M. will be in Atlantic City representing the organization and Dr. Brown has consented to conduct tests on any samples of motor fluids the oil men bring to him. Dr. Brown is also one of the speakers. He will appear on Oct. 27, the second day of the meeting. The testing of motor fuels and consultation with N. P. M. A. members will be continuous throughout the meeting. The Natural Gasoline Manufacturers Association has taken space in the exhibit hall for Dr. Brown's laboratory work.

Big Companies Invited

RAYMOND SHAW, director of publicity of the Independent Oil Men of America (the advertising group of the N. P. M. A.) has just returned to Chicago from New York where he made personal calls in the interest of attendance at the convention. Association authorities have taken this means of assuring the big oil interests that the Atlantic City meeting is not a secret nor a private affair. High officials of The Texas Co., Sinclair Consolidated Oil Corp., Tide Water Oil Co., Gulf Oil Corp., and several Standard Oil companies have been visited by Mr. Shaw and personally requested to attend the meeting; not only asked to come themselves, but to have their companies represented by as many of their department heads as possible.

Mr. Shaw believes the attendance in Atlantic City will be greatly augmented by representatives of big companies. The attendance of Independent oil men from the eastern states is certain. The special train from Chicago is practically filled and another from St. Louis is virtually assured, to accommodate the jobbers who will make the trip from the Mississippi valley. A number of oil men already have gone east from this section of country, meaning to visit the Philadelphia Exposition before the oil convention meets.

Midgley Asked to Speak

PRESIDENT Nicholas is enthusiastic over the prospects of having the name of Thomas Midgley, Jr., on the program. He has been asked to talk about Ethyl gasoline, its probable supply and availability to the Independent branch of the industry. No reply had been received from Mr. Midgley at the time of this writing.

A great many topics have been suggested for the "Round Table Discussions" at the Atlantic City meeting. Fifteen of them were listed in Mr. Nicholas' last letter to the membership. All of them will be brought up at the meeting and at least the most interesting of them will be popularly discussed.

Fake Solicitor At Work

Readers in Kansas and Cklahoma are asked to report to its Cleveland office, or its Tulsa branch office, any information they may have regarding H. Jenkins, who falsely purports to be a circulation representative of National Petroleum News. He was last heard of Sept. 2 in Chanute, Kan. He has a book of N. P. N. circulation receipts Nos. 1500 to 1599, but is not authorized to represent this publication in any way. We will appreciate any information that will help apprehend him.

TULSA.—Fred H. Kay, assistant to the president of the Pan-American Exploration Co., now is almost established in New York, his present headquarters. Mr. Kay has been in Tulsa recently attending to the removal of household goods that he stored six years ago. When he left the Twin States Oil Co. to go to Venezuela for the Venezuelan Sun Oil Co., he left his furniture behind, "temporarily." The Venezuela assignment turned out to be about five years long.

N. P. N. Refinery Reports Make Possible Estimate of Entire Mid-Continent

By J. C. Chatfield
N. P. N. Staff Writer

TULSA, Oct. 7.

AT the close of any month it is possible to arrive at an estimate of the statistical position of the Mid-Continent field as a whole by using as a basis the weekly reports gathered by National Petroleum News covering the operation of 124 refineries in the field. These estimates can be made within a week after the close of the month and a full 30 days before a complete report is issued by the U. S. Bureau of Mines.

National Petroleum News now has been gathering its weekly reports for nearly two years. For more than a year the report has covered the operations of virtually the same group of plants. The accumulated file of these figures has been made the subject of a study to ascertain their relationship to the complete report issued monthly by the Bureau of Mines.

Table No. 1 shows the percentage relationship of the National Petroleum News figures reduced to a monthly basis to the Bureau of Mines reports for the last seven months of 1925 and the first seven months of this year. Percentages have been figured for crude runs to stills on a daily average basis and total production and shipments of gasoline as well as gasoline stocks at the close of each month.

Percentages on Crude Charges

DURING the last seven months of 1925 the crude charges of the 124 plants averaged 64,81 per cent of the total still charges of all plants reporting to the Bureau of Mines. In the first seven months of this year the average was 64.17 per cent. The lowest percentage was 62.79 in February and the highest 66.47 in June.

The group of plants reporting to National Petroleum News has been adding to its cracking facilities during the past 14 months faster than the plants which have not been reporting weekly. This is shown clearly in the gradually increasing percentage of the gasoline production of the group.

During the last seven months of 1925 the 124 plants charged 64.81 per cent of the total crude charge and produced 59.22 per cent of the gasoline. During the first seven months of this year the gasoline production of the 124 plants was 60.79 per cent of the total while crude charges were 64.17 per cent indicating a gain of 1.57 per cent.

Studying the figures for this year it is found that in January crude charges were 64.56 per cent of the Bureau of Mines report and gasoline production 60.36, a difference of 4.2 per cent. This difference was gradually reduced until in July it amounted to only 2.47 per cent when the 124 plants reported still charges equal to 63.58 per cent of the Bureau of Mines report and gasoline production 61.11 per cent of the total.

More Variation in Shipments

THERE has been a somewhat greater variation between the weekly National Petroleum News reports and the Bureau of Mines reports in the case of gasoline shipments and consequently of gasoline stocks. This is due largely to a difference in the character of the plants reporting to National Petroleum News from those not reporting.

Plants reporting to this publication weekly produce a large part of the gasoline which is sold on the spot market and by contract to Independent jobbers. Some of those reporting are integrated companies with an outlet for a large part of their production but most of them must depend on jobbers for distribution of a greater part of their gasoline.

It has been pointed out in the past that the integrated companies keep their shipments of gasoline moving out from their refineries more constantly than the refiners dependent on jobber customers. The element of speculation is entirely eliminated from the rate of shipments from a refiner to his own stations. The gasoline is shipped when needed on a more steady basis.

Examination of the gasoline stock column shows that the 124 plants reporting weekly build up a larger percentage of the total gasoline stocks during winter months and allow their reserves to get lower in the summer. This situation is reflected in the gasoline shipment column as well, although it is surprising that there is a variation of only 5 per cent during the last seven months of last year and only 3.7 per cent in the first seven months of this year.

The variation in gasoline stocks likewise is small. During the last seven months of last year the plants reporting weekly reported a low of 36.04 per cent of the Bureau of Mines total in June and a high of 43.58 per cent at the close of December, a variation of 7.5

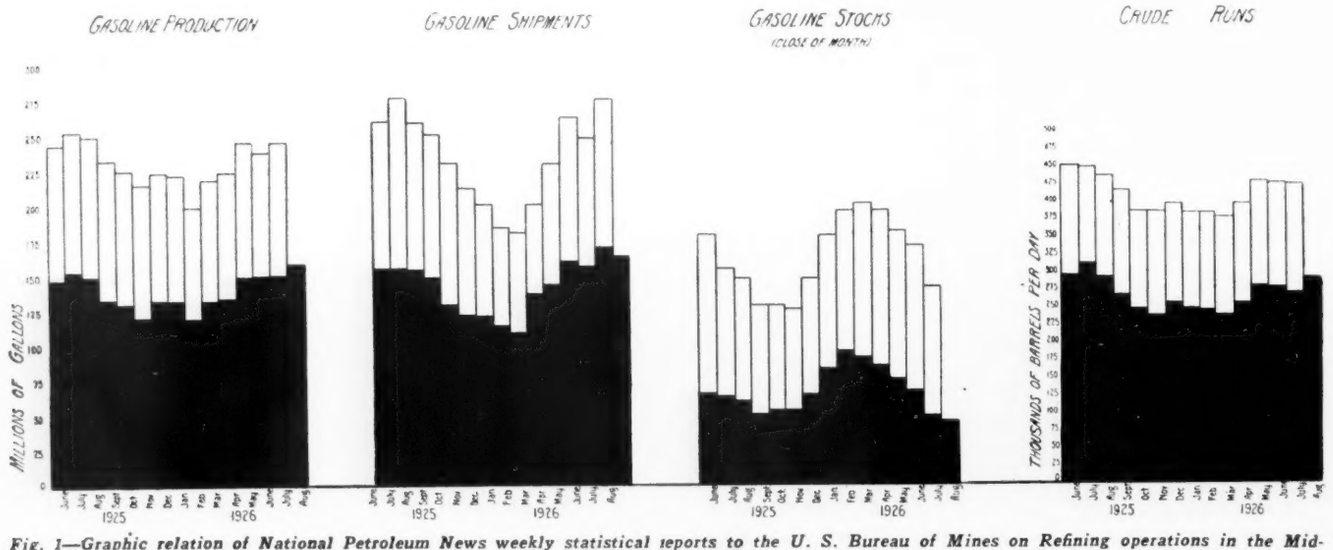


Fig. 1—Graphic relation of National Petroleum News weekly statistical reports to the U. S. Bureau of Mines on Refining operations in the Mid-Continent field. Top of columns represent Bureau of Mines figures for the total. Top of shaded area represents portion covered by N. P. N. reports.

Table No. 1

Percentages Relationship of Crude Runs, Gasoline Production, Shipments and Stocks at 124 Mid-Continent Refineries as Reported by National Petroleum News as Compared with Monthly Reports of the U. S. Bureau of Mines.

1925	Crude Runs	Gasoline Production	Gasoline Shipments	Gasoline Stocks
June	65.02	60.58	59.43	36.04
July	69.01	60.57	55.99	40.43
August	66.77	60.10	59.49	41.01
September	64.31	58.88	58.75	38.97
October	63.21	58.11	55.75	42.53
November	61.18	56.60	57.41	41.28
December	64.30	59.83	60.11	43.58
7 Mo. Average	64.81	59.22	58.13	40.55
1926				
January	64.56	60.36	59.91	46.98
February	62.79	59.92	59.86	48.21
March	63.18	60.78	63.52	45.64
April	63.84	59.54	61.42	43.01
May	64.77	60.74	60.99	41.13
June	66.47	63.12	63.38	39.56
July	63.58	61.11	61.27	34.69
7 Mo. Average	64.17	60.79	61.47	42.74

Table No. 2

Gasoline Stocks on Hand June 30, in Terms of Days Supply.

	Mid-Continent	All Others	Total U. S.
1923	64	75	73
1924	51	88	80
1925	26	75	62
1926	23	63	54

per cent. This year the low was at the close of July of 34.69 per cent and the highest at the close of February of 48.21 per cent.

Maintain Lower Inventories

AN interesting feature of the reports of the National Petroleum News is the fact that the group of 124 plants maintain lower inventories compared with operating capacity than those not reporting. Most of the smaller Independent plants in the field furnish weekly reports and the operators of these plants consistently have operated more conservatively than the larger companies with their greater financial strength and capability of carrying stocks over extended periods.

The policy of low inventories, however, is not entirely confined to the smaller plants in the Mid-Continent. An inspection of reports of the U. S. Bureau of Mines shows that the Mid-Continent gasoline stocks at the end of June this year were only half as large as those of the country as a whole in terms of days' supply.

Table No. 2, shows gasoline stocks of all Mid-Continent refineries as reported by the Bureau of Mines on June 30, for each of the last four years, in terms of days' supply. With these figures are compared gasoline stocks of all other districts and the United States as a whole. On June 30, 1923, the Mid-Continent refiners held gasoline stocks equal to 64 days supply while all others held 75 days supply. On June 30, 1925, this had been reduced to 26 days supply in the Mid-Continent while all other districts still held 75 days supply. This year on June 30 the Mid-Continent plants had 23 days supply and all others 63 days supply.

The relationship of National Petroleum News weekly statistical reports to the U. S. Bureau of Mines reports on refining operations in the Mid-Continent field is shown graphially in Fig. 1. The top of each column in the chart represents the Bureau of Mines figure for the total while the top of the area shaded black represents the total on which this publication gathers weekly reports.

An Explanation

IN a paper by Louis V. Cassaday superintendent of the Lomita gasoline Co., Long Beach, Cal., which was published on page 25 of the Oct. 6 issue of National Petroleum News, reference was made to a "CC14" fire extinguisher. This was due to a typographical error in the manuscript. Mr. Cassaday meant a carbon tetrachloride fire extinguisher, the mistake arising because the typist wrote the symbol for carbon tetrachloride, C Cl_4 as CC14.

Several inquiries were received as to what was meant by CC14 fire extinguisher and N. P. N. takes this means of making Mr. Cassaday's meaning plain.

A Simple Improvement In Boiler Practice

Oct. 20 issue.

WORK is now being done which will result in making it possible for the refiners of Western Pennsylvania to run their boilers wholly or partly upon distilled water, thus getting away in large measure from the troubles of scaling boiler tubes and plugged up steam lines. The work will have a lot of interest for refiners everywhere.

The line this work is taking and how it may be accomplished are described in an article in the next issue of National Petroleum News,

Seek To Shorten Men's Exposure To Hydrogen Sulfide

TULSA, Oct. 9.—Methods to reduce time of exposure of oil field workers to hydrogen sulfide gas and protective measures that can be adopted during the time of necessary exposure, are to be outlined to workers in the Panhandle field at four meetings in the Panhandle next week. The meetings are being arranged by Ray Miller, director of the Petroleum Safety Council of the Mid-Continent Oil & Gas Association, and follow a preliminary meeting on the subject in Tulsa Sept. 17.

The first meeting will be at the Marland camp west of Borger in the evening of Oct. 11; the second at the Roxana camp east of Borger Oct. 12; the third at the Skelly camp north of Borger Oct. 13, and the fourth at Pampa Oct. 14.

That in putting on the bradenhead the equipment be made up on the walk between the derrick floor and the engine house rather than in the cellar of the rig, to lessen the time of exposure to the gas with its hydrogen sulfide content, will be suggested by Harry C. Fowler, safety engineer with the Bureau of Mines, Bartlesville station. Various types of gas masks will be discussed. In general the hazards of work where this gas may be encountered will be explained to workers, and general oil field safety measures will be taken up. Members of the railroad commission of Texas have been invited to attend.

Lowe Joins Pure Oil

CHICAGO.—H. J. Lowe, formerly of the U. S. Bureau of Mines and recently of the U. S. Geological Survey, is now in the petroleum engineering department of the Pure Oil Co., Chicago offices. Mr. Lowe served with the Bureau in Casper, Wyo., among other places, then, with the transfer of supervisory work the Bureau was doing on leased public lands to the Geological Survey, became district supervisor at Muskogee, Okla.

Mr. Lowe has been succeeded at Muskogee by H. B. Soyster, who was assistant supervisor. Mr. Soyster formerly was with the White Eagle Oil & Refining Co. before joining the Survey. H. J. Duncan is assistant to Mr. Soyster in the Muskogee offices.

Texas Kills 3-Cent Tax Bill

AUSTIN, TEX., Oct. 9.—The Texas 3-cent-a-gallon gasoline tax bill was virtually killed in the senate when action on it was postponed indefinitely. The house had passed the bill. The present tax in Texas is 1 cent a gallon. Under the 3-cent bill public schools would have received one-fourth of the tax receipts and three-fourths to the roads.

S. O. Indiana Cuts Kerosene

CHICAGO, Oct. 12.—Standard Oil Co. of Indiana officially announced today that it would reduce kerosene prices 1 cent throughout its territory. Oct. 13.

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

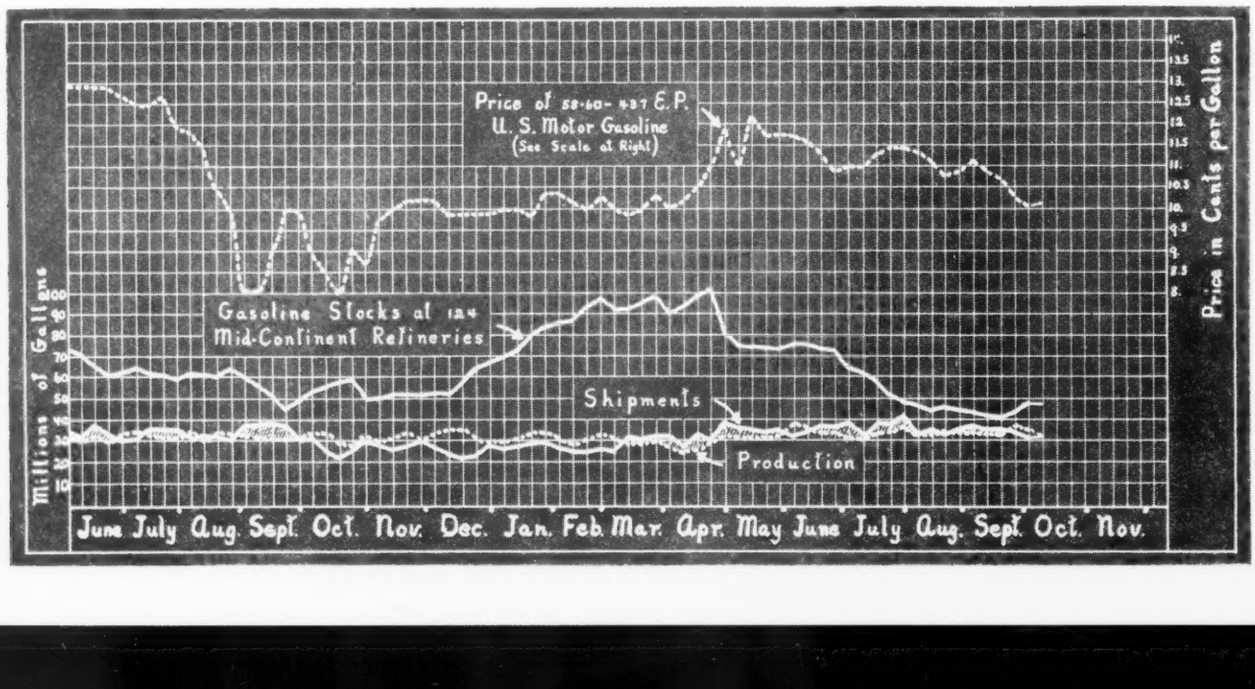
Mid-Continent Refinery Operations Week Ended Oct. 8 (By Telegraph)

	Kansas	Oklahoma	North and Cent. Texas	North La.-Ark.	Total Week Ended Oct. 8	Total Week Ended Sep.10
Plants Reporting	23	46	41	14	124	124
Crude Cap. (Bbls.)	98,200	165,900	144,300	53,700	462,100	462,100
Cracking Cap. (Bbls.)	21,000	45,800	15,750	20,200	102,750	.....
Da. Av. Crude Runs	44,356 —22.6	109,720 + 0.9	64,230 — 8.9	57,542 + 5.1	275,848 — 5.4	283,454
Da. Av. Other Oils	3,311 —68.2	—3,031	4,358 +18.9	1,619 +89.1	6,257 — 2.6	20,105
GASOLINE—Gallons						
Stocks Oct. 1	10,799,444	24,447,455	9,451,471	2,590,048	47,288,418	43,942,742
Prod. 10-1 to 10-8	6,470,829 —30.4	15,450,648 — 1.1	7,037,356 — 5.7	3,471,672 + 4.1	32,430,504 — 9.2	36,417,805
Ship. 10-1 to 10-8	6,576,079 —18.8	13,022,477 + 1.7	7,422,031 + 6.2	3,988,601 +48.8	31,009,188 —0.01	37,624,915
Stocks Oct. 8	10,694,213 — 1.0	26,875,626 + 9.9	9,066,796 — 4.1	2,073,119 —20.0	48,709,854 + 3.0	42,735,632
Ratio Sales to Prod	101.6%	84.3%	105.5%	114.9%	95.6%	103.3%
KEROSENE—Gallons						
Stocks Oct. 1	1,901,007	4,978,164	2,375,293	544,702	9,799,158	7,645,158
Prod. 10-1 to 10-8	1,077,030 —28.1	2,181,364 —29.4	1,392,666 + 5.4	459,832 — 4.5	5,110,892 —20.0	6,020,408
Ship. 10-1 to 10-8	934,961 —33.9	2,131,794 — 0.6	1,396,707 — 5.2	369,834 — 5.8	4,833,296 —10.9	5,617,460
Stocks Oct. 8	2,043,076 + 7.5	5,027,734 + 1.0	2,371,242 — 0.2	634,700 +16.5	10,076,752 + 2.8	8,048,104
Ratio Sales to Prod	86.8%	97.7%	100.3%	80.4%	94.6%	93.3%
STOVE DISTILLATE—Gallons						
Stocks Oct. 1	4,449,906	4,175,315	1,247,990	129,906	10,003,117	9,524,675
Prod. 10-1 to 10-8	589,541 —42.8	1,021,275 +52.2	280,887 —13.0	29,946 —26.6	1,921,649 — 6.9	1,259,052
Ship. 10-1 to 10-8	986,595 —21.7	623,474 +21.1	175,728 —24.8	26,208 —55.0	1,812,005 —12.0	1,766,605
Stocks Oct. 8	4,052,852 — 8.9	4,573,116 + 9.5	1,353,149 + 8.4	133,644 + 2.9	10,112,761 + 1.1	9,017,122
Ratio Sales to Prod	167.3%	61.0%	62.6%	87.5%	94.3%	140.3%
GAS OIL—Gallons						
Stocks Oct. 1	9,292,124	32,913,149	11,316,921	3,491,240	57,013,434	51,406,626
Prod. 10-1 to 10-8	1,007,008 —40.4	1,205,003 —61.7	791,655 —34.7	3,556,806 + 4.4	6,560,472 —30.7	6,810,725
Ship. 10-1 to 10-8	1,410,873 —15.9	2,331,829 — 1.4	952,990 +63.1	3,119,082 —20.4	7,814,754 — 8.5	4,562,740
Stocks Oct. 8	8,888,259 — 4.3	31,786,323 — 3.4	11,155,586 — 1.4	3,928,984 +12.5	55,759,152 — 2.2	53,654,611
Ratio Sales to Prod	140.1%	193.5%	120.4%	87.7%	119.1%	67.0%
FUEL OIL—Gallons						
Stocks Oct. 1	11,032,841	60,423,333	18,352,047	10,590,574	100,398,795	103,512,658
Prod. 10-1 to 10-8	4,248,106 —26.5	8,811,567 — 0.3	7,472,642 — 1.1	8,457,423 + 4.9	28,989,738 — 4.1	28,138,753
Ship. to 10-8	3,729,436 —24.5	8,455,609 +14.2	9,214,382 +22.2	7,901,846 + 7.4	29,301,273 + 7.6	25,994,599
Stocks Oct. 8	11,551,511 + 4.7	69,779,291 + 0.5	16,610,307 — 9.5	11,146,151 + 5.2	109,087,260 — 0.3	106,566,812
Ratio Sales to Prod	87.8%	96.0%	123.3%	93.4%	101.1%	89.2%

Gasoline Produced by Various Methods, Week Ended Oct. 8

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	La.-Ark.	% of Total	TOTAL	% of Total
Straight run	4,823,617	74.5	10,844,314	70.2	5,628,211	80.0	1,253,047	36.1	22,549,189	69.5
Cracked	1,351,153	20.9	3,676,034	23.8	1,237,197	17.6	1,910,639	55.0	8,175,023	25.2
Natural	296,058	4.6	930,300	6.0	171,948	2.4	307,986	8.9	1,706,292	5.3
Total	6,470,818		15,450,648		7,037,356		3,471,672		32,430,504	

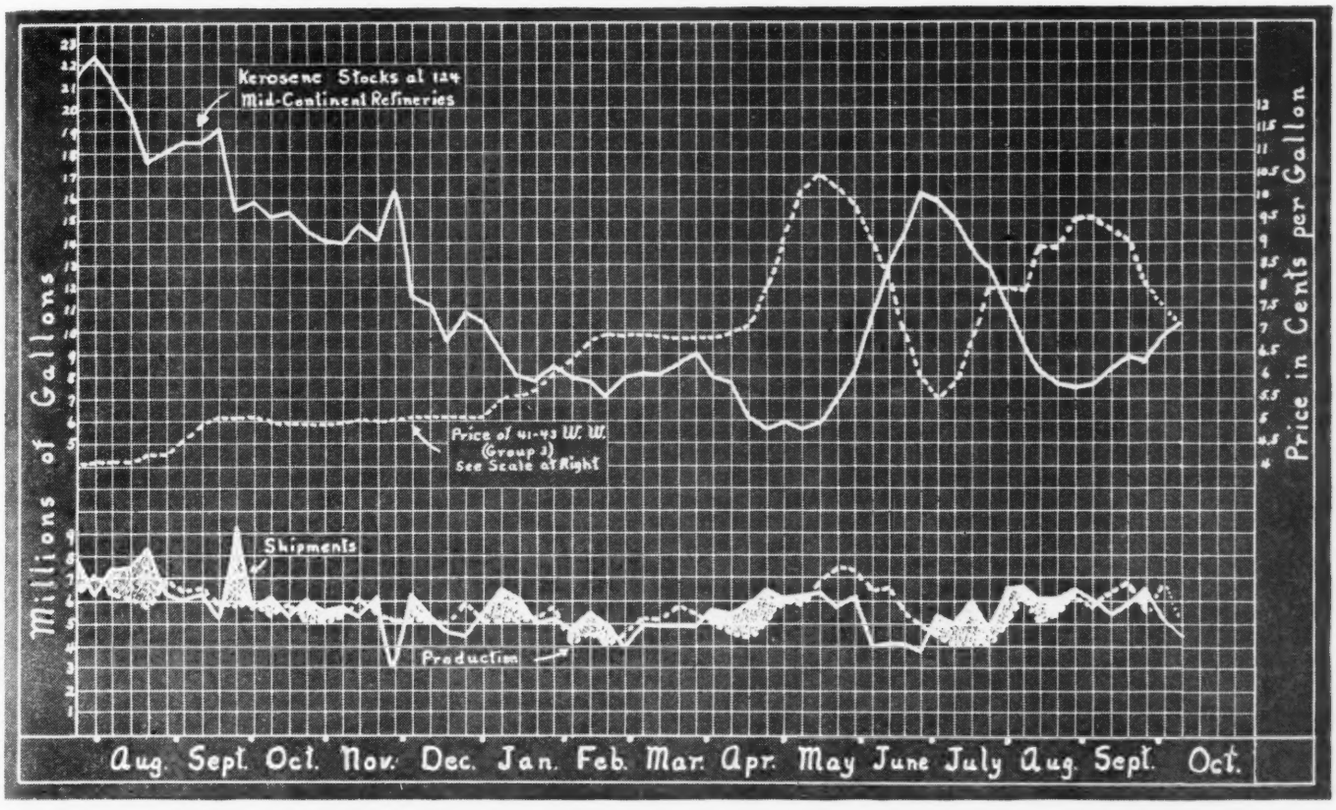
GASOLINE


Price of 58-60- 400 E.P. U. S. Motor Gasoline (See Scale at Right)
Gasoline Stocks at 124 Mid-Continent Refineries
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov.

Barometer of Mid-Continent Refinery Market— Week Ending Oct. 8

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

KEROSENE


Kerosene Stocks at 124 Mid-Continent Refineries
Price of 41-43 W. W. (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

124 Mid-Continent Refineries Reduce Runs to Stills

Staff Special—By Telegraph

TULSA, Oct. 12

CRUDE runs at 124 Mid-Continent refineries were reduced 15,700 barrels daily average to 275,848 barrels in the week ended Oct. 8, according to reports gathered by National Petroleum News. The largest reduction was reported by Kansas plants which were disturbed by high waters from adjacent streams. The 23 plants in Kansas reduced their runs 13,000 barrels to an average of 44,356 barrels a day and partly refined oils from 10,398 to 3311 barrels a day. Texas plants cut their crude runs 6200 barrels daily average to an average of 64,230 barrels. Slight gains were reported by Oklahoma and north Louisiana and Arkansas refineries.

As a result of the lowered operations production of gasoline was reduced 3,300,000 gallons at all plants to 32,430,504 gallons. Shipments of gasoline virtually unchanged from the previous week totaling 31,009,168 gallons. Stocks at all plants were increased 1,400,000 gallons to total of 48,709,754 gallons.

Comparison of the present report with that covering operations of the same group for the corresponding week last year shows present stocks to be more satisfactory. On Oct. 9, 1925, the 124 plants held 53,638,263 gallons of gasoline and during that week increased their stocks 3,600,000 gallons.

Kerosene production was reduced more than 1,000,000 gallons during the week to 5,110,892 gallons. This reduction was not caused entirely by the cut in crude runs in Kansas and Texas. Oklahoma refiners 900,000 gallons although they increased their crude runs slightly. Shipments of kerosene likewise fell off sharply, falling to 4,833,206 gallons. Stocks at all plants increased roughly 300,000 gallons to 10,076,752 gallons. Distillate stocks were almost stationary rising only 100,000 gallons to 10,112,761 gallons.

Texas refiners reported an increase of nearly 2,000,000 gallons in shipments of fuel oil and reduced their stocks 1,700,000 gallons to 16,610,307 gallons. All other groups reported minor stock increase but in the field as a whole the effect of the Texas increase in business was to cause a reduction of 300,000 gallons in stocks.

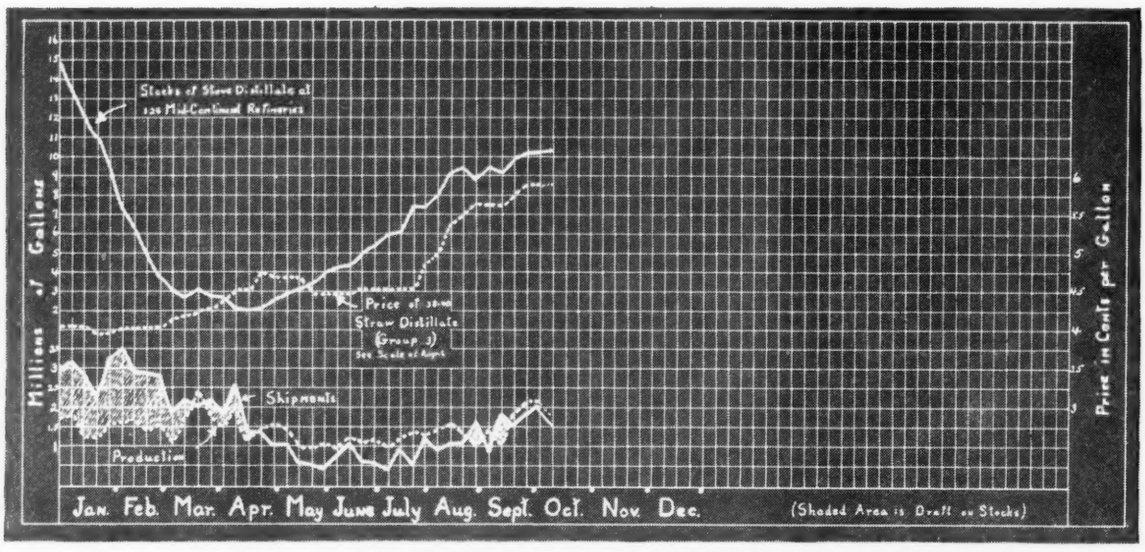
Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Oct. 8. Change in stocks figured from Sept. 10.

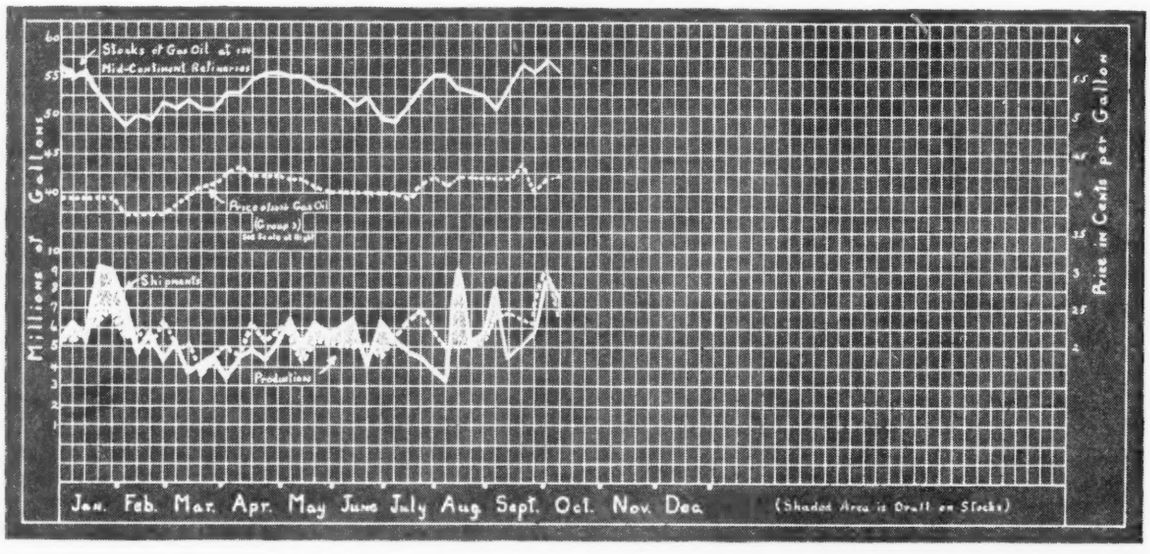
	Gallons
Gasoline	
Production	141,025,687
Shipments	135,051,565
Net change in stocks	+5,974,122
Ratio sales to production	95.8%
Kerosene	
Production	24,287,722
Shipments	2',259,074
Net change in stocks	+2,028,648
Ratio sales to production	91.6%
Stove Distillate	
Production	7,665,518
Shipments	7,269,879
Net change in stocks	+359,639
Ratio sales to production	94.8%
Gas Oil	
Production	29,104,472
Shipments	26,999,931
Net change in stocks	+2,104,541
Ratio sales to production	92.8%
Fuel Oil	
Production	119,265,710
Shipments	116,735,262
Net change in stocks	+2,530,448
Ratio sales to production	97.9%

Barometer of Mid-Continent Refinery Market—Week Ending Oct. 8

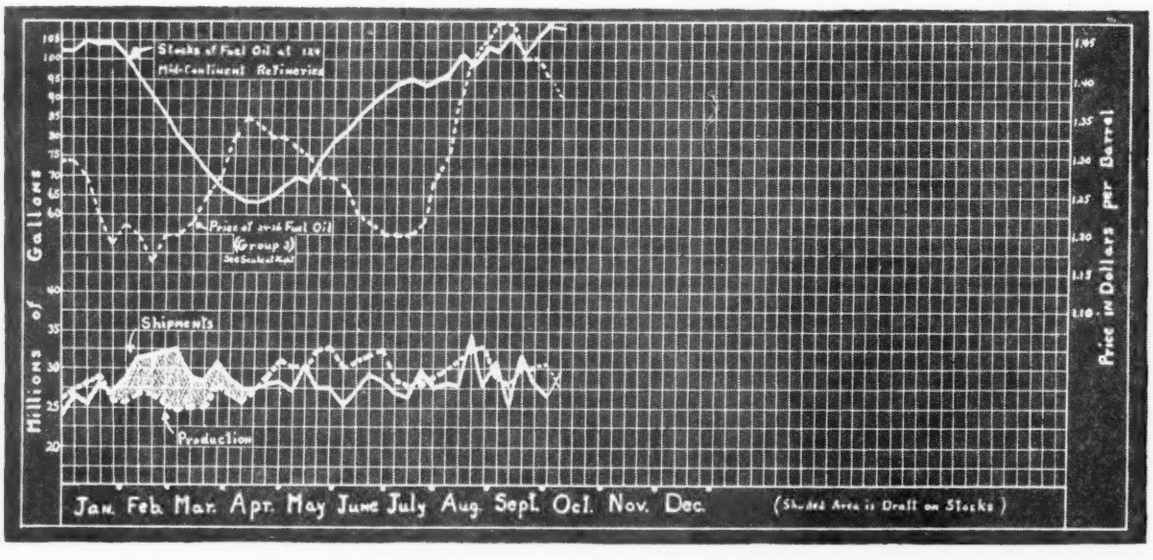
STOVE DISTILLATE


Stocks of Stove Distillate at 120 Mid-Continent Refineries
Price of 28-66 Straw Distillate (Group 3)
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
(Shaded Area is Draft on Stocks)

GAS OIL


Stocks of Gas Oil at 120 Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3)
Shipments
Productions
Millions of Gallons
Price in Cents per Gallon
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
(Shaded Area is Draft on Stocks)

FUEL OIL


Stocks of Fuel Oil at 120 Mid-Continent Refineries
Price of 20-26 Fuel Oil (Group 3)
Shipments
Production
Millions of Gallons
Price in Dollars per Barrel
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
(Shaded Area is Draft on Stocks)

Don't let your money *drip* away!

One drop a second—408 barrels a year! That shows what a little leak may cost. That shows the price some users pay for poor fittings—and the *saving* assured you by the precise fit and finish of Wheaton Products. The head of one large oil company which standardizes on the Wheaton Type A Tank Truck Faucet recently said, "It would be a source of great satisfaction to me to definitely state the amount of saving this one specialty has been to my company." ¶ Every day, Wheaton faucets, valves, joints, couplings, fillers, nozzles and connections are preventing waste and saving money for the hundreds of Wheaton users. *Let them save money for you!* Don't let your money *drip* away! Send for a sample of any Wheaton Product. Test it for 30 or 60 days, and if it does not prove wholly satisfactory, you may return it for full credit or refund. Also, write today for illustrated catalog, containing complete information about all the Wheaton Products.

Type K Barrel Faucet

Type 60 Filling Pipe Cap

Single Swing Joint

Double Swing Joint

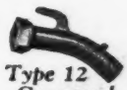
Tank Car Swivel Reducing Connection

Type A Tank Truck Faucet

Type B Tank Truck Faucet

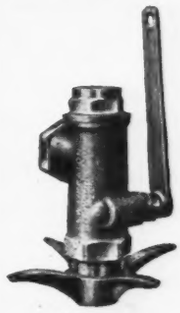
Type 24 Tank Truck Faucet

Anti-Freeze Valve



Type 12 Gooseneck Open Hose Nozzle

Type 36 Quick Hose Coupling



Type 25 Loading Valve

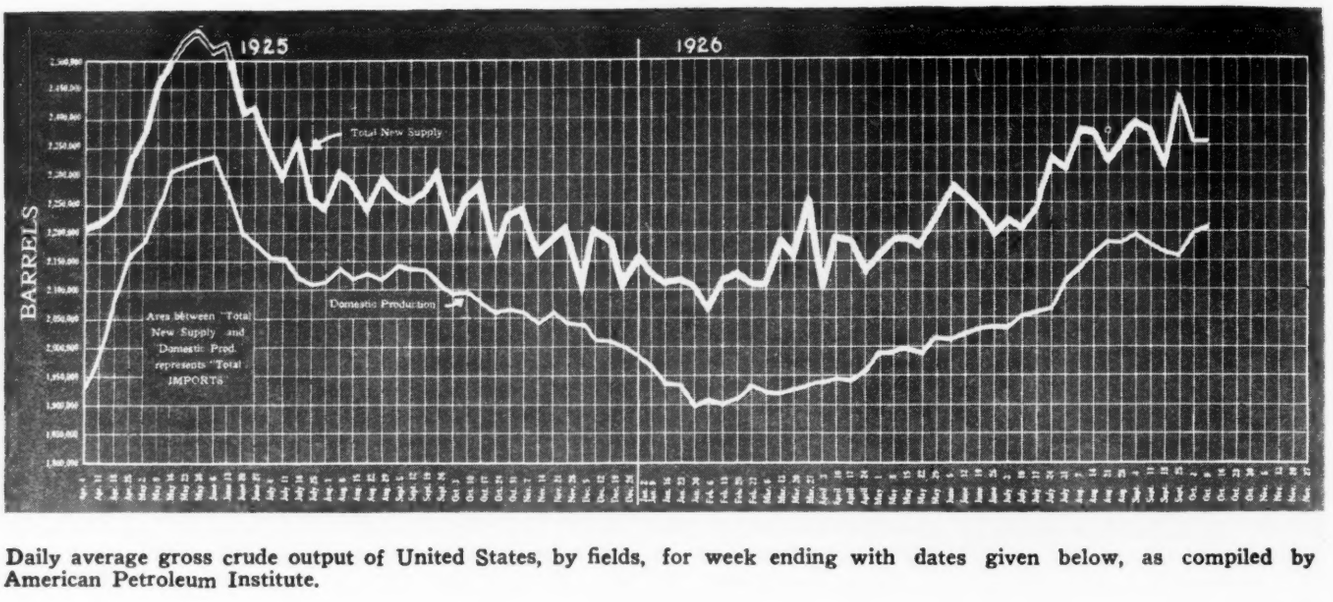
Type 50 Wet Hose Auto-Filling Faucet

Type 26 Loading Valve

A. W. WHEATON BRASS WORKS
NEWARK, N. J.

Wheaton

Daily Average Crude Oil Production and Imports



Daily average gross crude output of United States, by fields, for week ending with dates given below, as compiled by American Petroleum Institute.

Production Summary

	Oct. 9	Oct. 2
Production east of the Rockies	1,601,700	1,594,250
Increase		7,450
Total Production in U. S.	2,204,200	2,194,250
Increase		9,950
Crude Oil Imports	147,429	171,286
Decrease		23,857
Total Crude Supply	2,451,629	2,365,536
Increase		86,093

OKLAHOMA

	Oct. 9	Oct. 2
North Braman	15,150	12,750
South Braman	6,800	6,300
Blackwell	4,150	4,150
Hubbard	2,800	2,850
Thomas	1,950	1,950
Tonkawa	36,900	38,350
Garber	26,100	26,600
Burbank	46,800	46,750
Osage, outside Burbank	34,500	34,500
Watchorn	4,150	4,300
Cushing	21,500	21,500
Yale Jennings	13,800	14,200
Davenport	5,250	5,700
Bristow-Slick	27,300	27,350
North Okmulgee	17,550	17,550
Lyons-Deaner	3,950	3,950
Stroud	2,000	2,050
Cromwell	15,300	15,350
Papoose	9,550	10,000
Wewoka	27,050	26,650
Duncan district	7,400	7,400
Graham	10,400	10,350
Fox	6,750	6,750
Healdton	14,700	14,850
Hewitt	11,200	11,400
	34,950	30,000
Others	67,500	67,450
Total Oklahoma	474,950	470,500
Increase		4,450

KANSAS

	Oct. 9	Oct. 2
Greenwood County	44,950	45,300
Florence-Covert	1,950	2,000
Peabody-Elbing	4,200	4,200
Eldorado-Towanda	13,750	13,800
Augusta-Fox-Bush	4,900	4,950
Rainbow Bend	3,500	3,750
Russell	4,500	4,800
Others	37,050	36,350
Total Kansas	114,800	115,150
Decrease		350

NORTH LOUISIANA

Homer	5,600	5,650
Haynesville	9,200	9,400
Caddo, light	9,750	9,900
Caddo, heavy	2,450	2,850
De Soto, Red River	4,000	4,000
Elm Grove	500	550
Bellevue	2,100	2,100
Cotton Valley	7,600	7,300
Urania	16,700	16,450
Total North Louisiana	57,900	58,200
Decrease		300

ARKANSAS

	Oct. 9	Oct. 2
El Dorado	6,850	6,850
Smackover, light	14,150	14,250
Smackover, heavy	117,850	118,600
Stephens	1,600	1,700
Nevada	1,900	1,900
Lisbon	7,800	7,800
Total Arkansas	150,150	151,100
Decrease		950

NORTH TEXAS

Burkburnett	13,200	12,900
Electra	16,300	15,950
Iowa Park and K-M-A	4,000	4,000
Wilbarger	13,850	13,650
Hutchinson County	131,900	116,050
Balance Panhandle	10,350	9,900
Petrolia	650	600
Archer County	32,300	31,850
Montague		6,300
Others	800	800
Total North Texas	230,200	212,000
Increase		18,200

East Central Texas

Mexia	11,200	11,250
Currie	750	800
Richland	1,350	1,350
Corsicana-Powell	24,250	25,450
Wortham	6,050	6,100
Nigger Creek	12,200	12,850
Total E. C. Texas	55,800	57,800
Decrease		2,000

West Central Texas

Stephens County	10,800	10,950
Eastland County	5,500	5,800
Desdemona	1,700	1,750
Young County	6,850	6,550
Brown County	12,250	11,500
Palo Pinto County	400	400
Callahan County	4,200	4,200
Shackelford County	8,800	8,500
Reagan County	29,100	29,200
Crane & Upton Counties	12,450	12,550
Coleman County	1,650	1,850
Others	2,800	1,400
Mitchell	3,800	3,850
Total W. C. Texas	100,300	98,500
Increase		1,800

GULF COAST

Goose Creek	9,950	9,450
Hull	21,450	20,750
Saratoga	1,150	1,150
Blue Ridge	1,600	1,600
Damon Mound	850	1,300
Batson	1,600	1,600
West Columbia	8,850	8,800
Humble	3,850	3,850
Pierce Junction	2,100	1,900
Sour Lake	8,700	8,250
Spindletop	79,800	85,750
Orange County	7,150	7,550
Edgerly	1,000	1,000
Evangeline	1,050	1,100
Vinton	6,000	6,200
Lockport	2,900	4,600
South Liberty	4,050	4,050
Big Creek	1,300	900
Boling	2,400	2,650
Others	1,700	1,950
Total Gulf Coast	167,450	171,400
Decrease		6,950

SOUTHWEST TEXAS

	Oct. 9	Oct. 2
Luling	20,750	21,250
Laredo District	17,100	17,250
Somerset	1,950	2,000
Lytton Springs	3,650	3,700
Piedras Pintas	50	100
Others	550	550
TOTAL—Southwest Texas	44,050	44,950
Decrease		900

ROCKY MOUNTAIN

WYOMING

Salt Creek	43,150	46,500
Grass Creek	3,100	3,050
Elk Basin	800	750
Big Muddy	3,300	3,350
Lost Soldier	5,050	5,150
Rock River	2,600	2,750
Lance Creek	1,050	1,050
Teapot Dome	250	1,500
Hamilton Dome	1,200	1,150
Others	2,350	2,250
Total Wyoming	62,850	67,500
Decrease		4,650

MONTANA

Cat Creek	2,650	2,700
Sunburst	18,000	18,000
Others	200	200
Total Montana	20,850	20,900
Decrease		50

COLORADO

Moffat (Craig)	3,500	3,550
Fort Collins	3,350	3,550
Florence	500	500
Others	750	900
Total Colorado	8,100	8,500
Decrease		400

NEW MEXICO

Artesia	3,000	3,000
Hogback	750	700
Rattlesnake	1,050	1,050
Total New Mexico	4,800	4,750
Increase		50
Total Rocky Mountain	96,600	101,650
Decrease		5,050

CALIFORNIA

Santa Fe Springs	47,500	47,500
Long Beach	93,500	93,500
Huntington Beach	50,000	48,000
Torrance	27,000	27,000
Dominguez	21,000	22,000
Rosecrans	13,000	13,000
Inglewood	41,000	41,000
Midway-Sunset	94,000	94,000
Ventura Avenue	50,500	50,000
Others	165,000	164,000
Total California	602,500	600,000
Increase		2,500

EASTERN

(Including Ill., Ind., Ky., Ohio, W. Va., Pa., and N. Y.	109,500	110,000
Decrease		500

Seminole Again Accounts for Most Of Oklahoma's Production Gain

By A. F. Hinton
N. P. N. Staff Writer

Tulsa, Okla., Oct. 10.

OKLAHOMA production increased 4,600 barrels during the week just ended, and averaged 474,750 barrels daily, according to National Petroleum News estimate. This increase, coupled with a gain of about 6300 barrels last week, places the states output up some 11,000 barrels in two weeks, which is practically a direct reflection of the growth of the Seminole field during that period.

Seminole averaged 34,910 barrels daily during the past week, a gain of nearly 5,000 barrels over the preceding week, and at the end of the week was making nearly 38,000 barrels daily. North Braman recorded a gain of about 2,800 barrels this week, but this was offset by a loss of 1,500 barrels at Tonkawa. With the exception of Wewoka which showed a small gain, all other active fields in the state had a downward tendency. Seminole continues to hold its position as the only field in the state where anything of particular interest is going on, as well as the only field whose production shows signs of mounting to the point where it may be a menace to the crude price structure.

DURING the week two wells were added to the list of wells completed in the Wilcox for the field, the other 22 being in the Hunton lime. The field's highest production figure yet attained was recorded during the past 24 hours when it made 37,315 barrels. During the coming week it is expected that four or five new wells will be drilled in the Wilcox, so there is a possibility that the field may be producing as much as 50,000 barrels daily at the end of that period.

May Be Dry Hole

ONE of the wells drilled into the Wilcox during the past week now looks like a dry hole, having penetrated that formation 13 feet without getting any oil or gas, and the varying depth at which the Hunton lime is being found at different wells indicates the possibility that the field will be somewhat spotted, with numerous dry holes to be expected among the wells now drilling. The apparent dry hole that marred the Seminole record during the week was the Indian Territory Illuminating Oil Co. and Gardner Petroleum Co. No. 8 Reid, in the southeast corner s. e. n.e. of 24-9-6 a well which formerly was a producer in the Hunton lime and was drilled deeper. It is one location and the same distance east from the original discovery well of the I. T. I. O. company, and is one mile east and one mile north of the Independent—Garland discovery well which was the first to drill into the Wilcox.

An important completion of the week was that of the Mid-Continent Petroleum Corp. no. 1, Rentie, in the southeast corner of 14-9-6 the farthest north well in the field. This well made 1,900 barrels in the first 24 hours after topping the Wilcox at 4188 feet drilling to 4203 feet. It is about a half mile north of the nearest production in the field. Another good well, and the ninth producer in the Wilcox, was the No. 3 Fixico of the Independent Oil & Gas Co. and R. F. Garland, in the northeast corner sw. ne. of Sec. 24, a location north and east of the discovery well on this farm. This well had the Hunton lime at 3962 feet, went into the Wilcox sand at 4077 feet and at last reports had been drilled only four feet in and was making 3830 barrels of oil daily, after starting off at better than 200 barrels an hour. The discovery well, No. 1 on this lease, is making 7269 barrels daily. No. 2 is making 4820 barrels, and the three together 15,929 barrels. These three wells are producing about 40 per cent. of the total output of the field. The next well in on this lease should be No. 4, in the northwest corner sw. ne. of sec. 26, one location due north of the discovery well, which was drilling at 4098 feet at last reports Four other wells are drilling on the 80-acre property, at depths ranging from 910 to 3300 feet.

Big Wells at Braman

IN the north Braman field, Kay county, near the Oklahoma-Kansas state line, recent developments have resulted in the completion of three large wells in the Wilcox sand which are now making better than 12,000 barrels daily. The daily average production of the Braman district during the past week was 21,870 barrels, of which 16,120 barrels were being produced in the north field, and 6750 barrels in the south, or Braman townsite field. Two of the big Wilcox sand wells are owned by the Comar Oil Co. and the third is owned by the Mid-Continent Petroleum Corp.

In Kansas, an interesting report was that a showing was had by the Midwest Refining Co. in Russell county about 10 miles south of the producing field in that county. This well, known as the No. 1 Dorland, and located in the southeast corner of the northwest 5-4-15w, got the Oswald sand from 3027 to 3053 feet and drilled to total depth of 3058 feet. It is reported to have swabbed 182 barrels in 29 hours.

In Kingman county, where one discovery well early last spring caused a lot of excitement, only to be followed by offsetting dry holes, a new showing was reported during the week. This was in the No. 1 Beshara of Crawford & McKenna, located in the northeast corner n.w. of 31-28-5w. A sand which may be the Wilcox was found at 4260 feet and at one foot in it was reported that there was 600 feet of 41 gravity oil in the hole. The discovery well in this area was that of D. P. Fleeger and the Carter Oil Co. in 16-27-

(Continued on page 38)

Drilling Operations in Oklahoma, Kansas and North Texas

	Oct. 9—Week Ending					Oct. 2				
OKLAHOMA	Loc.	Rigs	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
Burbank	5	3	22	...	30	3	5	24	1	33
Other Osage	20	13	45	10	89	17	12	37	12	78
Bristow-Cushing	15	13	146	13	187	15	13	148	10	186
North Oklahoma	10	25	140	56	231	7	26	140	60	233
South Oklahoma	22	25	169	35	241	19	26	173	32	250
Muskogee	..	11	50	35	96	...	15	63	9	87
Okmulgee-Bristow	8	41	122	30	201	9	42	124	30	205
Tonkawa	2	1	16	1	20	2	2	19	1	34
Wewoka-Cromwell	15	47	234	43	339	16	64	226	35	341
Total Oklahoma	108	179	944	223	1434	88	205	954	190	1437
KANSAS	67	74	226	91	460	61	82	225	89	457
NORTH TEXAS										
Eastland County	..	5	55	11	71	...	5	59	17	81
Stephens County	..	13	18	14	45	...	8	23	14	45
Texas Panhandle	..	134	405	82	621	...	144	384	108	636
Mexia District	..	4	25	8	37	...	15	27	4	46
E. Texas Wildcats	..	2	14	12	28	...	2	15	11	28
W. Texas Wildcats	..	156	344	109	609	...	156	383	124	663
Wichita Falls	..	97	142	65	304	...	99	140	66	305
Total N. Texas	...	411	1003	301	1715	...	429	1031	344	1804
GRAND TOTAL	177	664	2173	615	3609	149	716	2210	623	3698

Completions in Oklahoma and Kansas, Week Ending Oct. 9

Carter County

Company	Well	Location	Depth	Initial Prod.
Magnolia	2	SWc SE SE 18-1-3W	2811–2847	635
Simpson-Fell	1	NWc SE NW 34-1-3W	2995–3035	6
Westheimer	2	SEc SW SW 34-1-3W	2146–2497	120
Skelly	1	NWc SE 3-2-3	1960–2297 OWD	779
Magnolia	11	SEc SW NE 23-2-3W	2152–2360	100

Comanche County

Red Seal	1	NWc 5-1-10W	T.D.1633 OWD	Dry

Creek County

Southwestern	3	CEL NW NE 27-17-8E	3098–3112	30
Gled	5	CEL SW 13-19-8	2138–2178	100
Grieves	1	NWc NE 23-19-8	2971–2995	60
Burk-Greis et al	1	NWc 21-17-6	3465–3504	420
Gypsy	14	SW NE NW 1-18-11	2060–2102	780
Riverland	2	SEc NW NW 1-18-11	2095–2102	840
Mid-Cont	2	SWc SE 4-14-10	3145–3162	110
Lima	4	NWc NE NW 24-17-8	T.D.3594 OWD	Dry
Scruggs et al	1	SEc 36-15-10	T.D.3137	Dry
Chief-Independent	1	SEc SW 25-14-10	T.D.3345	Dry

Garfield County—Garber

Mid-Cont. et al	65	SWc NE SE 13-22-4	3636–3642 OWD	150
Sinclair	46	NEc NW NW 18-22-3	3586–3604	360
Sinclair	16	SE NW NW 19-22-3W	2160–2191	60
Knox	4	SEc NW NW SW 31-22-3W	2217–2223	10

Grady County

Marland	1	NEc SE NE 17-3-5W	1810–1820	200

Grant County

Blackwell	2	NEc 22-27-3	3760–3997	53
Gypsy	1	SEc NW 33-26-3W	T.D.5449	Dry

Hughes County

Dixie	7	SEc NW NW 5-7-8E	4202–4216	1200

Jefferson County

Humble	1	SWc SE 27-6-5W	T.D.2002	Dry

Kay County

Comar	1	SWc SE 16-29-1W	3387–3406	5448
Vernon	2	SWc SE 17-29-1E	2333–2335	120
Gypsy	3	NWc NE NW 28-25-1W	4331–4334	494
Gypsy	4	SW NE SW 28-25-1W	4319–4322	657
Gypsy	1	NEc NW 33-25-1W	4338–4345	70
Anclu	3	SEc NW NE 16-27-1W	T.D.3437 OWD	Dry
Manahan et al	3	SWc NE 16-27-1W	T.D.3498	Dry

Lincoln County

Magnolia	5	SWc 3-14-5	3484	Dry
Mid-Cont	9	NWc SE NW 8-15-6	4023–4029	100

McIntosh County

Tiger Mtn	3	NWc SW NW 18-11-14	T.D.1930	Dry

Noble County

Mid-Cont. et al	12	NEc SW SE 16-24-1W	1983–2005	5

Nowata County

Prairie	18	SWc SE NW 31-25-17E	446– 481	40

Okfuskee County

Prairie	1	SEc SW 26-11-9E	T.D.3984	Dry
Ark. Fuel	2	NEc SW SW 33-10-9E	T.D.3858	Dry
Independent	13	CEL NW NE 13-12-11	T.D.3400	Dry

Okmulgee County

Clark et al	4	SWc SE SW 14-15-14	T.D.2465 OWD	Dry

Osage County—Burbank

Phillips	12	SE NE SE 20-26-6E	2935–3011	210
Phillips	1	SWc 21-26-6	2938–2996	550
Prairie	1	SEc NE 10-27-6	T.D.3365	Dry

Osage County

Lake et al	2	NE SE SW 6-24-8	2846–2856	75
Tidal	4	NWc SW SE 20-24-9	2154–2179	135
Peters	1	NW NE SW 32-24-9	2125–2160	30
Ashland et al	13	SE NW SW 14-23-11	1625–1675	15
Pioneer	3	NWc NE 8-20-11	1885–1898	20
Rose et al	3	NW NE SW 10-27-11	1153	Dry
Adlum et al	2	SEc NW SE NW 8-23-10	T.D.2263	Dry

Company	Well	Location	Depth	Initial Prod.

Pawnee County

Mid-Cont	23	SWc NE SW 16-20-7	2568–2589	35

Rogers County

Maxon	2	SWc NE NW 7-19-16	T.D. 500	Dry
Swift	1	NEc NW 6-19-17	T.D. 508	Dry

Seminole County—Seminole

Mid-Cont	2	NWc SW SE 24-9-6	3906–3931	2150
Tidal	2	SEc NE SW 23-9-6	4170–4192	4210

Seminole County

Indep. et al	1	SEc NW SE 7-9-8E	3207–3241	125
I. T. I. O	2	SEc SW NE 15-8-6	2432–2436	36M
Sinclair	10	NWc SE SE SE 33-11-8	1834–1845	50

Stephens County

Beard-Cobb	1	SEc NW SW SW 30-1-8W	1988–1998	25

Tulsa County

S. S. Home	1	SEc NE 23-19-11E	2209–2256	150
Thompson-Black	4	CWL NE NW 10-16-12	1638–1686	5M
Thompson-Black	5	CSL SW SW 5-16-13	2127–2142	40
S. S. Home	1	SEc NE 4-19-11E	T.D.2254	Dry
S. S. Home	1	NWc SE SE 23-19-11	T.D.2321	Dry
Thornton	1	CSL NW SE 35-19-11	T.D.2474	Dry

Wagoner County

Winters	1	SWc 19-18-15	T.D.1290	Dry
Barnes	1	CSL SE NW 6-18-16	T.D. 800	Dry
Nealey	3	SWc 19-17-18	T.D. 650	Dry
Ryan	1	SWc 5-17-19	T.D. 690	Dry
Wilson et al	1	NEc 8-15-14	T.D. 648	Dry

KANSAS

Butler County

Empire	2	C NW SW SE 12-27-6E	2676–2708	200
Johnson et al	7	C SW NE SW 3-28-6E	3034–3041	400

Chautauqua County

Mitchell et al	1	C NW SE SE 7-32-11E	T.D.2301	Dry
Prairie	1	NEc SE 35-34-9	T.D.2288	Dry

Coffey County

Darby	1	C NE SE SW 8-22-14E	T.D.1786	Dry

Cowley County

Hull	2	C SE NE SW 15-32-4E	T.D.3371	Dry
Marland	1	C SW SW NE 15-32-4	3255–3268	450

Elk County

Pure	11	NWc NE NE SE 14-31-10E	1640–1648	80
Theta	1	C NE SE SE 27-31-10	T.D.3039	Dry
Miller et al	1	C SW SW NW 5-31-11	T.D.1970	Dry

Greenwood County

Phillips	3	C NW NE NE 11-22-10	2080–2140	150
Phillips et al	2	C NE NW NE 11-22-10	2107–2151	75
Empire	13	C SE SE NW 14-22-11	1865–1909	100
Empire	7	C SW NE SE 14-22-11	1879–1910	30
Empire	6	CSL SE NW NE 19-23-9	2535–2550	50
Pure	6	C SE NE SE 8-23-11	1920–1994	40
Texas	2	C SE NW NW 16-23-11	1917–2005	50
Texas	1	C NE SE NE 17-23-11	1921–1972	250
Tidal	10	SWc NW SE 15-23-13	1628–1687	60
McGinnis et al	2	C NE SW NW 30-24-11	1825–1850	200
Vickers	1	C NE SE SE 2-24-10	T.D.2235	Dry
Farr et al	1	C SW NE NW 33-25-10	T.D.2023	Dry
Skelly	1	C NE NE SW 23-25-11	T.D.2305	Dry

Logan County

Gasche-Amerada	1	C SW SW SE 36-21-12	T.D.1962	Dry
Hull et al	1	C SW SE SE 31-21-5E	T.D.2448	Dry
Theta	4	CEL NE SW NW 30-21-10	2207–2262	100

Marion County

National	4	CEL SE SW NE 17-21-4	2441–2442	340

Sumner County

Roxana	1	C SE SE NW 25-31-2E	1839–1885	1100
Roxana	1	C SW SW NE 25-31-2	1835–1885	1400
Roxana	1	C NW NW SE 25-31-2	1842–1885	775

Completions in North Louisiana and Arkansas, Week Ending Oct. 8

LOUISIANA

Urania

Company	Well	Location	Depth	Yield
O. W. Clark, trustee	Harper No. 10	26-10-1E	1503	300
Nat. Gas & Fuel Corp.	Urania P-1	23-10-1E	1525	s.w. aband.
Keene & Woolf	Griswold No. 1	3- 9-1E	1507	50

LaSalle Parish—Davis District

Cherokee Pet. Co.	La.CentralLbr.Co.No.3	33-11-3E	1805	dry aband.

Caddo Parish—Caddo District

Gulf Refining Co.	Ferry Lake No. 253	22-20-16	2285	50
Ohio Oil Co.	E. K. Smith No. 21	12-21-15	1645	15
Ohio Oil Co.	E. K. Smith No. 22	7-21-14	1660	150

Caddo Parish—Shreveport District

Gulf Refining Co.	J. M. Byrd No. 1	2-19-14	3904	dry aband.

Claiborne Parish—Homer

Geo. T. Shaw et al.	King No. 1	20-21- 8	2255	dry aband.

Bossier Parish—Bellevue

R. L. Crook	Larkin No. 3	14-19-11	400	1m. gas

Natchitoches Parish

Weaver Brothers	Fee No. 1	4- 7-7W	2420	dry aband.

Morehouse Parish

Company	Well	Location	Depth	Yield
Nat. Gas & Prod. Co.	Tensas Delta No. 8	33-22-4E	2170	10m. gas

Ouachita Parish

Ladel et al.	Fee No. 34	6-19-5E	2010	dry aband.

ARKANSAS

Calhoun County—Fordyce District

Delmar Oil Co.	Guibor No. 1	16-11-14	3005	dry aband.

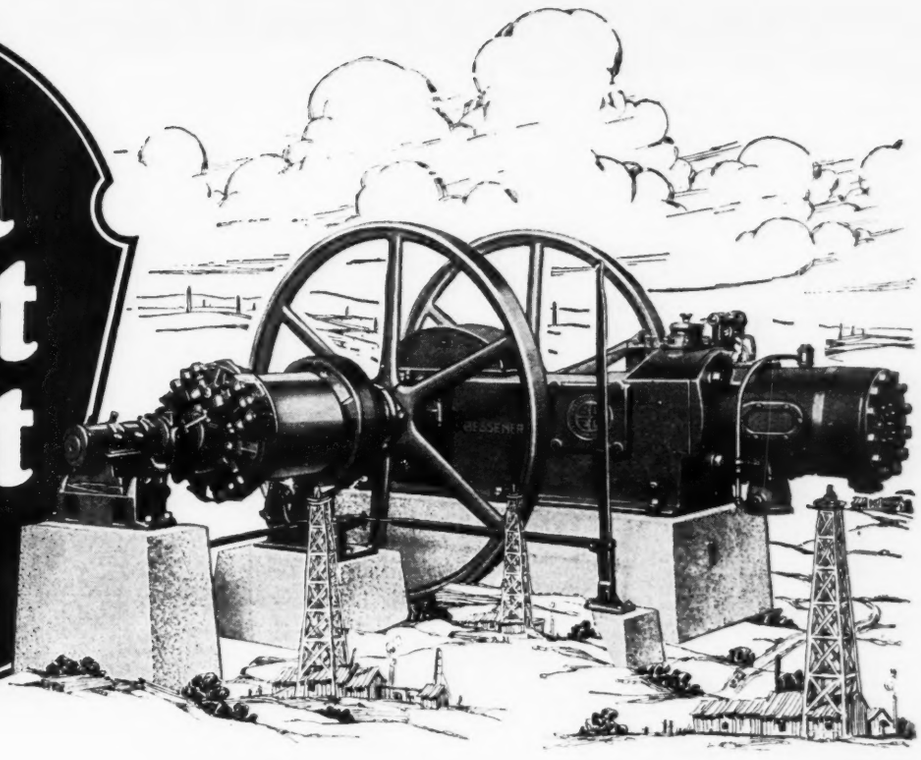
Lisbon

Imperial Oil & Gas Co.	Parker No. 2	21-17-16	2160	15
Imperial Oil & Gas Co.	Parker No. 3	21-17-16	2190	15
Ohio Oil Co.	Stocks No. 3	21-17-16	2147	40
Rovenger Oil Corp.	Dumas No. 3	9-17-16	2106	25

Smackover

Phillips Pet. Co.	B. Joyce No. 16	33-15-15	2640	30m. gas
Roxana Pet. Co.	Berg No. 7	28-15-15	2645	100
Federal Pet. Co.	Lawton A-9	10-16-15	2615	50
Lion O. & R. Co.	Graves No. 10	3-16-15	2675	100
Texas Oil Co.	Calloway No. 8	4-16-15	2365	350
Gulf Refining Co.	L.Werner S.M.Co.No.48	6-16-16	2258	10

You can't beat it!



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Air valve on top of bed plate.

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Jump spark ignition.

Sight feed glass through which crankcase oil continually circulates.

6-inch exhaust on 30 H.P. and 35 H. P. engines.

Adjustable and removable main bearings.

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Large, quickly removed side plates give easy access to adjustable crosshead.

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Force feed lubrication operating from same eccentric as ignition.

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EXAMINE all the oil field engines you can see out in the fields—and then look at the new Bessemer. Your experience with engines will tell you there's nothing like it.

Examine its sixteen outstanding features of construction, look at the way it's built, note its ruggedness, its simplicity and its symmetry. You'll readily admit that it is the Oil Field Engine you have been waiting for.

It's a Bessemer through and through. It's far advanced in its engineering features and it's sturdy in its construction. Every part is built to do its work for years and years and still more years. It delivers 100% of its power continuously and requires as little attention as any piece of machinery that can be built.

We welcome the closest comparison of the new Bessemer Oil Field Engine with *all* the others. We know you can't beat it!

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BESSEMER

BESSEMER OIL FIELD ENGINES – COMPRESSORS **VACUUM PUMPS – ROLLER PUMPING POWERS**

Completions in N. C. & E. Texas, & Panhandle Week Ending Oct. 9

Company	Well Farm	Location Survey	Depth	Initial Prod.
Archer County				
Gulf	1-Kemp	RUR	1793–1794	97
Empire et al	2-Barkey	SP	1572–1574	38
Burns	1-Turberville	Carson	1516–1525	80
Plains	1-Turberville	Carson	1489–1520	850
Texas	8-Turberville	Carson	1493–1522	600
Chenault et al	5-Turberville	Carson	1495–1510	160
Gates	13-Thomas	Thomas	1152–1173	80
Gates	15-Thomas	Thomas	1150–1171	65
Gates	17-Thomas	Thomas	1174–1177	80
Marland	11-Thomas	Thomas	1158–1167	20
Magnolia	3-Hudson	Harris	1149–1166	20
Schermerhorn	2-Prideaux	BBB&C	596– 641	16
Empire et al	1-Wilson	Sec. No. 70	T.D.1504	Dry
Pipe et al	1-Wilson	TNG	T.D 1653	Dry
Cranfill et al	1-Turberville	Carson	T.D.1552	Dry
Mid-Kans	4-Andrews	Carson	1601	Dry
Cosden et al	4-Jehlik	Harris	T.D.1150	Dry
Muser et al	1-Turberville	Harris	T.D.1402	Dry
Philmack et al	1-Wilson	Hurchinson	T.D.1620	Dry
Golding et al	1-Farmer	Probert	T.D.1550	Dry
Simms-Burns	4-Turberville	Jefferson	T.D.1092	Dry
Brown County				
Union	1-Hickman	Kinsley	T.D.1298	Dry
Dozier et al	3-Byrd	Travos	T.D.1360	Dry
Holdeman	1-Keller	English	T.D.1194	Dry
Amerada	1-Turner	Dungan	T.D 2260	Dry
Roy	1-Alcorn	Kenney	T.D.1375	Dry
Maxwell et al	1-Bell	Brown	T.D.1515	Dry
Hyner	1-Leach	BBB&C	T.D.1000	Dry
Advance	1-Whitted	Allen	T.D.1585	Dry
Humble	2-Hickman	Benson	1190–1225	745
Humble	4-Kilgore	Benson	1184–1196	100
Barclay	5-Allen	Delgado	1147–1162	100
Bradstreet	1-Forby	Smith	1158–1198	180
Gilman et al	6-Thompson	Smith	1220–1236	50
Gillespie et al	5-Newton	Swaom	1293–1305	25
Humble	4-Waldridge	ET	1250–1272	117
Moore	4-Waldridge	ET	1213–1242	50
McLester	12-Waldridge	ET	1263–1245	130
Cosden	5-Williams	May	1128–1149	50
Hill-West	16-Newton	Mitchell	1192–1216	62
Mid-West	12-Suttles	Mitchell	1151–1160	58
Bowers et al	1-Eads	Day	1316–1324	75
Magnolia	1-Fry	Chaudoin	1322–1324	30
McLester	5-Fry	Chaudoin	1307–1309	500
Sinclair	1-Shore	Ryan	1207–1334	60
Smith	1-Carson	Honeycutt	1230–1252	12
Callahan County				
Amerada	5-Long	Anderson	1387–1410	60
Slick	3-McDonough'	Edwards	1400–1414	60
Slick	4-Long	Anderson	1401–1411	125
Moore et al	1-Walde	Caldwell	T.D.1585	Dry
Carson County				
Gulf	12-Burnett	I&GN	3080–3145	90
Gulf	11-Burnett	I&GN	T.D.3024	Dry
Coleman County				
Miller-Jones	1-Vaughn	Vaughn	T.D.1740	Dry
Cooke County				
Haskell et al	1-Rolls	Chambliss	868– 888	68
Hoosier	4-Dennis	Moss	1234–1244	100
Hoosier	7-Dennis	Moss	1184–1187	200
Sun	3-Hyman	Moss	1175–1183	100
Stahl-Lynch	1-Nerr	Ivey	797– 806	54
Crane County				
Texas	6-King	GCSF	2301–2352	70
Crockett County				
Young et al	1-Massey	GCSF	T.D.2200	Dry
Eastland County				
Gulf	1-Horn	McLennon	T.D.1581	Dry
Corzelius	1-Allison	H&TC	T.D.1605	Dry
Mid-Kans	1-Farmers	....	T.D.2750	Dry
Gulf	1-Allen	Fields	T.D.2160	Dry
Gordon	1-Hughes	ET	T.D.1321	Dry
Gray County—Panhandle				
McMan	1-Worley	L&GN	2963–2981	65
Empire	1-Benton	L&GN	T.D.3370	Dry
Howard County				
Edgar et al	1-Chald	WNW	T.D.1801	Dry
Hutchinson County—Panhandle				
Gulf et al	24-Dial	H&OB	2812–2822	430
Gulf et al	16-Dial	H&TC	2770–2810	200
Gulf et al	20-Dial	H&TC	2070–2920	120
Marland	6-Johnson	M&C	2969–2989	200
Skelly	1-Pritchard	D&SE	2785–2805	208
Empire	5-Weatherly	M&C	2972–3026	8420
Limestone County				
Moss et al	3-Ronnen	Varella	2592–2832	458
Transcontinental	6-Cogsdell	Varella	2842–2675	330
Transcontinental	7-Rossen	Varella	2845–2733	360
Transcontinental	14-Rossen	Varella	2500–2740	430
Barclay et al	2-Rossen	Varella	2607–2841	150
Gedley et al	2-Rossen	Varella	2434–2803	720
Transcontinental	12-Rossen	Varella	2831–2837	200
Transcontinental	13-Rossen	Varella	2305–2845	60
Penn et al	1-Peoples	Price	T.D.3164	Dry
Transcontinental	2-Erskine	Varella	T.D.2825	Dry
Montague County				
Gulf	2-Howard	Votan	1131–1160	139
Texas	4-Martin	Votan	1130–1138	120
Pure	2-Rowland	Votan	1011–1110	246
McMan	2-Howard	Chambliss	1163–1180	22
Jack County				
Buttram	5-Preston	Chairs	2024–2032	75
Kelly	1-Bell	Rockefellow	T.D.1000	Dry
Shackelford County				
Dingee et al	1-Killer	Patterson..	T.D.1349	Dry
Wells	1-Matthews	ET	T.D.2165	Dry
Young et al	1-Smalley	TEL	T.D. 365	Dry
Waterbury	1-Poindexter	TP	T.D.1500	Dry
Crafill et al	1-Ivy	TP	T.D.1322	Dry
Rosier-Pendleton	3-Cook	ET	1269–1289	215
Rosier-Pend	6-Cook	ET	1310–1310	100
Rosier-Pend	8-Cook	ET	1305–1312	75
Rosier-Pend	24-Cook	ET	1329–1380	80
Rosier-Pend	29-Cook	ET	1121–1149	100
Rosier-Pendleton	14-Cook	ET	1308–1318	86
Rosier-Pendleton	18-Cook	ET	1206–1226	85
Rosier-Pendleton	4-Cook	ET	1342–1342	153
Engle	1-Matthews	ET	828–	20
Hodges et al	1-Matthews	ET	962–	62
Hope	9-Reynolds	TP	1054–1060	40
Stephens County				
Mid-Kans	18-Hill	Tally	T.D.3280	10
Upton County				
Dixie	5-Hughes	TEL	2072–2153	782
Marland	15-Sanger	King	2200–2240	270
Gulf	1-Baker	Denton	2179–2270	75
Republic	4-Baker	Grooms	2222–2266	70
Texas	1-Burleson	Jones	2154–2189	153
Gulf	1-Shirk	MK&T	2206–2288	30
Roxana	3-Bowen	GCSF	2075–2077	802
Humble	1-McElroy	T.P.	T.D.3515	Dry
Gulf	2-Baker	Green	T.D.2286	Dry
Wichita County				
O'Neal	3-Ferguson	Specht	T.D.5007	Dry
Wilbarger County				
Humble	7-Waggoner	H&TC	1886–1888	20
Humble	15-Waggoner	H&TC	2339–2345	10
Humble	17-Waggoner	H&TC	1839–1848	40
Milham	12-Waggoner	H&TC	2570–2600	10
Young County				
Hotchkiss	1-Morrison	Sherrill	2250–2263	90
Marland	4-Campbell	TEL	T.D.1001	Dry
Ryan et al	1-Calvin	Johns	T.D. 600	Dry
Godley	1-Hones	Sallie	T.D. 804	Dry
Wurtz et al	1-Manley	TEL	T.D.2503	Dry
Murchison-Fain	1-Manley	TEL	T.D.2503	Dry

(Continued from page 35)

7 w, which was originally a 500-barrel well at 3886 feet.

Wells Completed

IN Oklahoma during the week just closed, 71 wells were completed, of which 42 were oil wells, two were gas wells and 27 were dry holes. This compares with last week's report, which included 92 completions, divided 48 oil wells, five gas wells, and 39 dry holes. The 42 oil wells in this week's report had total initial production of 20,767 barrels, or an average of 494.4 barrels per well. Last week, 48 wells brought in 12,834 barrels of new production, with a per well average of 267.4 barrels.

Completions reported from Kansas this week totaled 30, of which 19 were oil wells and 11 were dry holes. Last week, there were 27 Kansas completions. Divided 19 oil wells, eight dry holes. The 19 oil wells this week totaled 5850 barrels initial output of 307.9 barrels per well. Last week 19 wells accounted for 2260 barrels new production, with a per-well average of 119.0 barrels.

LOS ANGELES.—The casing and barreling plant and terminal at Los Angeles harbor of the Petroleum Export Corp. was recently sold to the California Petroleum Corp. The latter will operate the plant.

Glenn A. Smith, vice president of the Petroleum Export Corp., is continuing in the business, handling both domestic and export shipments.

Illinois Jobbers Issue Association Organ

CHICAGO, Oct. 8.—The Oil Can, official publication of the Illinois Petroleum Marketers' Association, is out. Volume 1, number 1 was the October issue. It is the newest of the bulletins of the state associations. G. A. Primm, Springfield, Ill., signs his name as "Secretary, Editor, etc."

The Oil Can has eight pages and is printed on book paper. It carries advertising. The first issue is devoted largely to announcement of the association's fall meeting which will be held in Hotel Pettenger, Centralia, Ill., Oct. 13.

How long could you continue in business if all your tank cars were suitable for carrying only gas oil to and from your refinery

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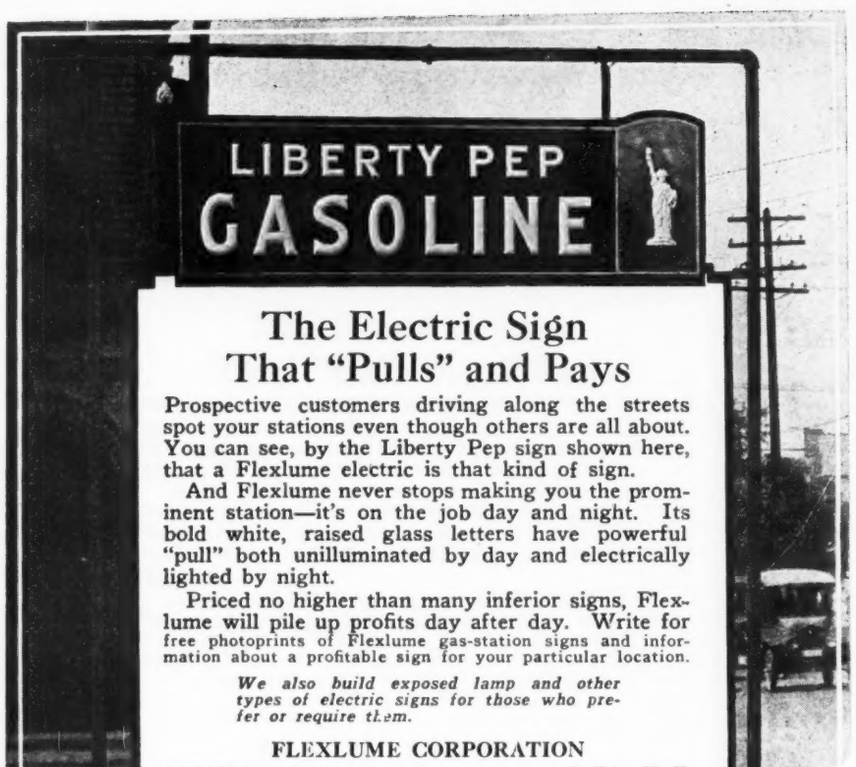

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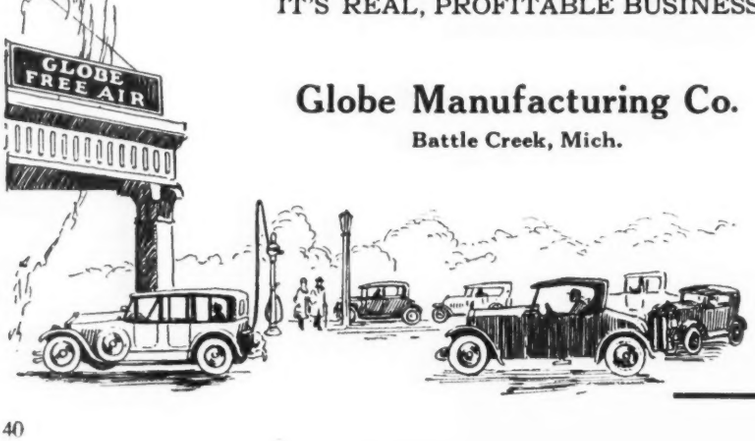


Globe Manufacturing Co.

Battle Creek, Mich.

Tennessee Oil Jobbers Elect New Officers

NASHVILLE, TENN., Oct. 9.—The "Roster of Oil Associations" carried occasionally in National Petroleum News has recently been in error as to the officials of the Tennessee Independent Oil Men's Association. At the annual meeting, held late in June at the Andrew Jackson hotel here, new officers were elected. They took office July 1.

R. M. Prichard, Home Oil Co., Ripley, Tenn., is president. E. E. Johnson, Columbia Oil Co., Columbia, Tenn., is vice-president. G. H. "Gid" Alsup, Jr., Consumers Supply Co., Murfreesboro, Tenn., is secretary-treasurer, and C. M. Abeel of Abeel Bros. Oil Co., Chattanooga, Tenn., is sergeant-at-arms. The directors exclusive of Mr. Alsup, are as follows:

B. F. Diggs, Paris Oil Co, Paris; John Lowe, Cassety Oil Co., Nashville; Mark H. Senter, Southeastern Oil Co., Chattanooga; Byron Ensel, Benzol Gas Corp., Nashville; E. B. Fisher, American Oil Co., Morristown; Sanford Garner, Covington; B. E. Holman, Elk Oil Co., Fayetteville; W. D. Hudson, Clarksville Oil Co., Clarksville; F. P. Kendall, Kendall Oil Co., Memphis; H. N. Moore, Dresden Oil & Gas Co., Dresden, and H. A. Thompson, Thompson Oil Co., Nashville.

Superior of California Included in Merger

LOS ANGELES, Oct. 9.—It was announced today that negotiations were being concluded for the inclusion of the Superior Oil Co. of California in the merger of the Julian Petroleum Corp. and the Marine Oil Corp. into the California Eastern Oil Corp.

The Superior is operating in several Los Angeles Basin fields and has 17 wells drilling in the new town lot area of Huntington Beach. It has about 6000 barrels daily production at present.

Inclusion of the Superior will give the California Eastern daily production exceeding 25,000 barrels when its Huntington Beach wells are completed.

It is rumored that New York financial interests are backing the merger and a large eastern oil company will take over the new organization. The Tide Water-Associated Oil Co. is being mentioned frequently in this connection.

RUTHTON, MINN.—The Batalon Oil Co. recently added another visible pump to its filling station at Batalon, Minn. It has also paved the driveway and installed an ornamental fence, according to H. G. Harden, secretary of the Ruthton Oil Co., Ruthton, which owns the former company.

Devises Accounting System That Tells How Much Filtering Costs

By Paul Truesdell
N. P. N. Staff Writer

OIL CITY, PA., Sept. 30 BACK in 1908 when P. S. Tarbox, now manager of the Independent Refining Co. here, began trying to devise a method of finding out accurately how much it cost to manufacture the various products made in a refinery he was assured with great positiveness that it could not be done. Particularly, his superiors and associates told him, it would never be possible to figure costs of distillation and of filtering.

A good many refiners have held that belief up until recently. But Mr. Tarbox did not believe it. Ever since then, at odd moments in the office and in long evenings at home, he has been studying the problem. And he has devised methods of cost accounting covering distillation and filtering and other phases of the business. He admits that his system is not perfect, but the cost of using it is practically nothing. No high priced accountant had to be hired to handle it, and the figures that the monthly cost reports show have considerably changed Mr. Tarbox's ideas on marketing. Only his method of figuring filtering costs will be discussed here.

He knows by means of his system what price he must get for his products in order to show a profit and he knows whether all products are selling at a profit.

Since his election as trustee in charge of the department of accounting and statistics of the National Petroleum Association, Mr. Tarbox has tried to make effective for the benefit of members of the association, an accurate accounting system and his efforts have met with much interest. He has enlisted the aid of M. W. Mattison, in charge of accounting for the American Petroleum Institute, and of two or three expert accountants with other oil companies to improve and broaden the system he has developed and make it, if possible, more generally adaptable.

Finds Interesting Facts

TWO or three times in papers read at meetings of the National Petroleum Association, Mr. Tarbox has hinted at some of the things he has learned from his cost accounting system. For instance, at the Cambridge Springs meeting of the association last April, he stated that his observation of filter house costs under the spot light of his accounting system had convinced him that the average cost of filtering 600 steam refined stock to 600 Oil City E specifications was 4 to 5 cents a gallon. And yet for months, Oil City E had been selling at around 2 cents above the market price of 600 steam refined. In other words, most of the oil of this grade had been moving at a price that spelled a loss of 2 or 3 cents to the refiner. Other refiners took the hint because, Mr. Tarbox says, since that statement was made there has been mighty little 600 Oil City E on the market at less than 5 cents a gallon above the price of 600 steam refined and it moves just as freely at a price commensurate with its cost. He pointed out at another time that kerosene had sold at times below the cost of manufacture when it would have sold in just as great volume at a profitable price.

Another statement that startled some of the refiners was that the smallest part of the cost of filtering oils is the cost of the new Fullers earth and the heaviest item is that of restoring the used clay. His cost accounting system shows the factors entering into total filtering costs at his plant divide as follows:

Cost of new earth—26 per cent.
Cost of restoring earth—50 per cent.
Cost of actual operation—24 per cent.

The same identical percentages would not apply to other plants than his own but the ratio would be likely somewhere near the same. Each refiner could figure it from his own experience. The installation of new clay roasting furnaces of improved type, which are being put in at some of the Pennsylvania refineries will probably reduce the cost of restoring the clay very much.

The method used by Mr. Tarbox for keeping track of his filter house costs is simple. He has worked out a form sheet which is filled out daily by the filter house superintendent and is turned in to Mr. Tarbox at the end of the month. One of these sheets, which is reproduced herewith (Fig. 1) is made out for each of the filters. The figures on the form shown herewith are not actual figures showing costs at the Independent refinery but are used for illustration of the method of filling out the sheets.

Keep Check on Efficiency

MANY of the items on the sheets, such as time the filter is started, time it is stopped, down time for washing and so on have nothing to do with cost accounting but they do aid the superintendent in keeping a check on the efficiency of filter house operations.

The clay is designated in Mr. Tarbox's system as N for new clay or 1, 2, 3, 4 and so on according to the number of times it has been burned. The sheet reproduced purports to show the record of filter No. 1 for June. The dates and times of day on which the filter is packed each month is entered, together with the grade of clay used and the product filtered. In this case it was kerosene, designated by W W, all kerosene made at the Independent plant being filtered.

Taking the monthly individual sheets representing the operation of all the fil-

FILTER HOUSE INDEPENDENT REFINING CO. Filter No. Month June 192 6

	TIMES	BURNING		PACKING		Soaking	RUNNING						WASH	STEAMING			
		STARTED	FINISHED	STARTED	FINISHED	STARTED	ON STRM	TANK	GRADE	TANK	GAGE	GALLONS	PREPARED	STARTED	STARTED	FINISHED	TRANSFERED
	DTE / BURNT	A OR P	A OR P	DTE / HOUR	DTE / HOUR	DTE / HOUR	DTE / HOUR	TO	COL. NO.	NO	BEFORE / AFTER		STARTED / DRAW	DTE / HOUR	DTE / HOUR	DTE / HR.	FILTER NO.
22	3	7 A	2 10 PM	22 2 15	22 6 15	25 7 A	25 7 10 A	26	10 A WW	130	0 54"	1000	26 10 A / 27 10 A	27 10 30 A	27 10 PM	28 8 A	

REMARKS

Fig. 1—One of Mr. Tarbox's accounting sheets, kept daily in the filter house for each individual filter. The figures on this form are purely to show the method of handling and do not represent operations at the Independent plant.

FILTER HOUSE AUGUST—1926

Times burned Filter No.	N-1-2-3-4-5-6-7-8-9-10	Total	Kind oil
	13-13 5 10 3 7	6	kerosene
	2-1-1-1-1		
	10-10-10-10-9-6-5 8- 4- 3- 7-12	12	1420
	2-2-2-2-2-1-1		

Fig. 2—Monthly sheet on which the individual filter sheets are entered and totaled at the end of the month.

ters for that month, Mr. Tarbox is able to figure the cost of filtering the oil that went through the filter house during that month. He assumes that at the market price of Fullers earth it costs about $40 to charge a filter with new earth. This includes all costs, which he has figured from experience. He depreciates the earth after each burn by a varying amount that he has learned by close study, according to the product filtered through it, but averaging about 12 to 14 per cent for each burn. The depreciation figure covers both reduced value of the clay and volume loss by burning. In fact, the only variable in figuring the costs is the condition of the clay. The labor cost and other factors are the same for charging a filter whatever clay is used.

While the gallonage figures of products filtered are kept on the sheets, these are not used in arriving at the final cost of filtering. Mr. Tarbox says it is almost impossible to make the gallonage figures check in transfers from tank to tank and so on. What he is interested in is the cost of the actual amount of salable product he has obtained from the filter house.

So at the end of the month he gauges his tanks, adds the amount in them to the amount sold and shipped during the month and deducts from that total, the amount of stocks on hand at the end of the preceding month. This gives him the actual quantity of sold and salable products.

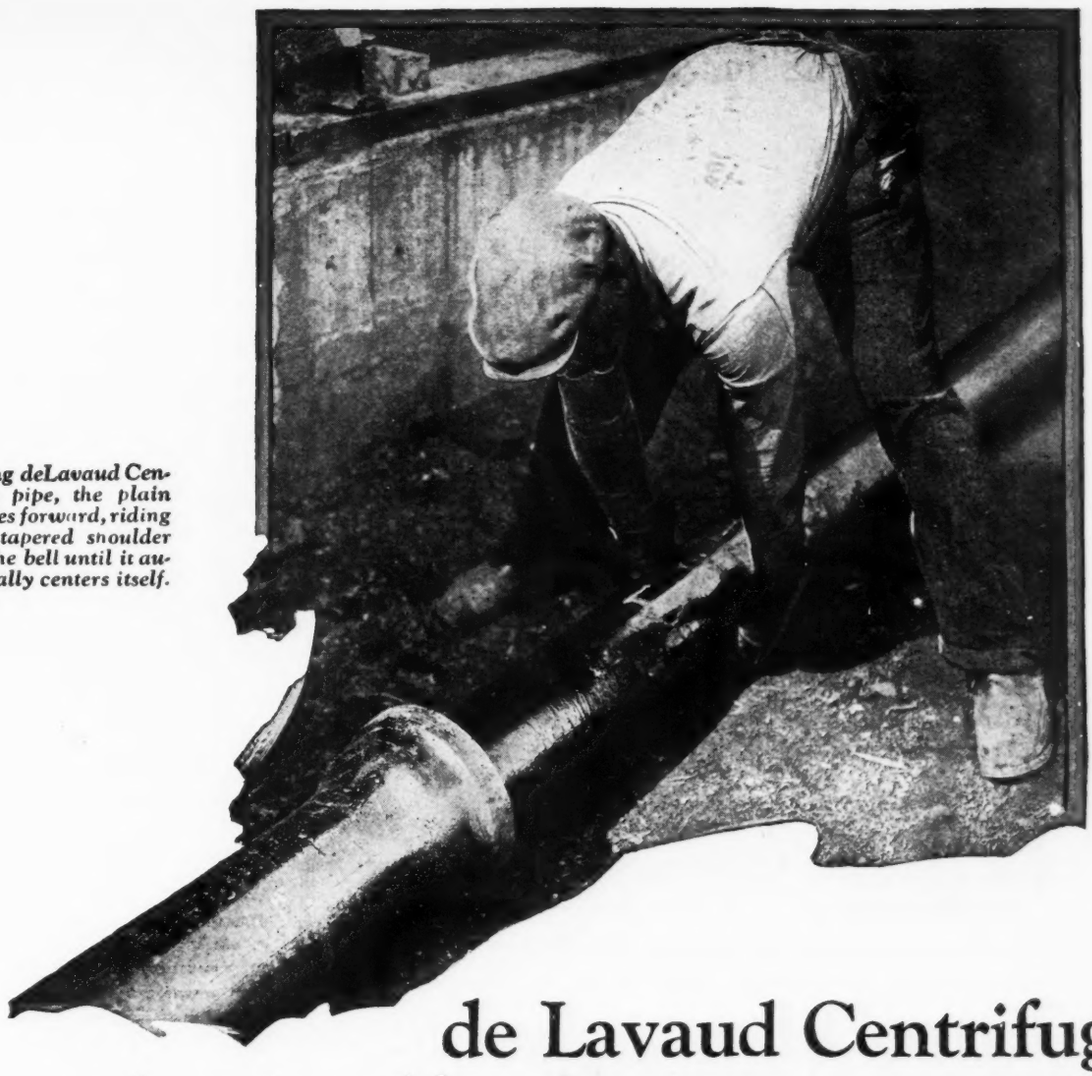
He divides the latter part into the cost of operating the filters in dol-

FILTER HOUSE RECAP SHEET—1926

			Month
Times burned N-1-2-3-4-5-6-7-8-9-10-11-12		Total	
Brand of Oil	Kerosene		
			January
			February
			March
			April
			May
			June
			July
	2-1-1-1-1	6	August
			September
			October
			November
			December
Total			
Brand of oil	1420		
			January
			February
			March
			April
			May
			June
			July
	2-2-2 2-2-1-1	12	August
			September
			October
			November
			December
Total			

Fig. 3—Yearly recap sheet in which the monthly records of the filter are brought together to show a year's operations.

The exhibit of the Pennsylvania Crude Oil Association at the Sesqui-Centennial Exposition in Philadelphia. At the extreme left is the machine for testing coefficient of friction of oils, with a demonstrator. The black cabinet just below the sign contains facsimiles of the tools used in drilling for the original Drake well; to the right of that is the bulletin board showing the relative posted price of Pennsylvania and other crudes. On the wall is a wrought iron chart, with lights behind it and glasses of various colors to represent Pennsylvania products. The flashing on and off of the lights shows the course of Pennsylvania crude through the refinery. On a table in the center is a White bus engine which was run for 208,000 miles on Pennsylvania lubricating oil without reboring of the cylinders. The exhibit was described on page 22 of the Sept. 29 issue of National Petroleum News.



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de Lavaud Centrifugal pipe is self-centering—easy to lay

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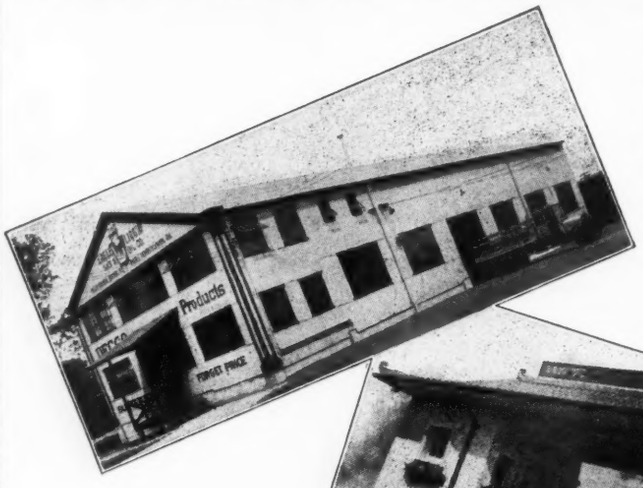

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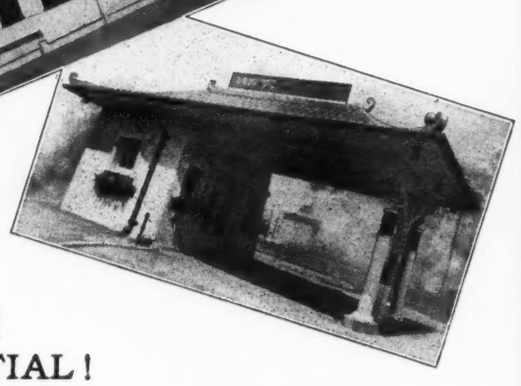

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lars and the result is the cost of filtering per gallon. There are two factors not taken into account in this system. These are, volume losses of oil in filtering and volume loss in recovery of the naphtha used for diluting the cylinder stocks for filtering.

Mr. Tarbox, having worked out the system and gotten it running smoothly, could easily delegate the compiling of the monthly figures to some one else. But he does it himself in odd moments snatched from his busy day. It is a hobby of his and he totals the figures, multiplies, subtracts and divides to get his final results while he is waiting for long distance telephone calls to come through, or in various other momentary pauses in the business routine.

"One great fault of many accounting systems is that they go too much into detail, they take too much time and make records that are too voluminous," says Mr. Tarbox. With this in mind he has made his system simple.

All the information contained on the monthly individual filter reports is boiled down for convenience into the short and simple form shown in Fig. 2. This particular form shows the number of filters of kerosene and 1420 oil (each product except kerosene is usually designated by a key number), that were put through during August. It also shows the number of the individual filters used and the grade of clay used each time. Using his arbitrary figures of filter charging costs with the different grades of clay, he can quickly determine the total cost of operating the filter house in that month. Dividing into the cost the number of gallons sold and on hand, arrived at as described, he can quickly find the cost of filtering the oil on hand.

For a yearly record he has a recap sheet shown in Fig. 3 in which the monthly information is entered up for the 12 months.

In 1908 Mr. Tarbox quit the job of freight agent of a railroad and went to work for the Warren Refining Co. of which C. W. Jamieson was then the head. In the refinery job he had to be bookkeeper, among other things, although he had had little bookkeeper's training. He early found that the profits of the refinery were not what they ought to be. Some oils were continually piling up in storage while on other products it was impossible to keep up with orders.

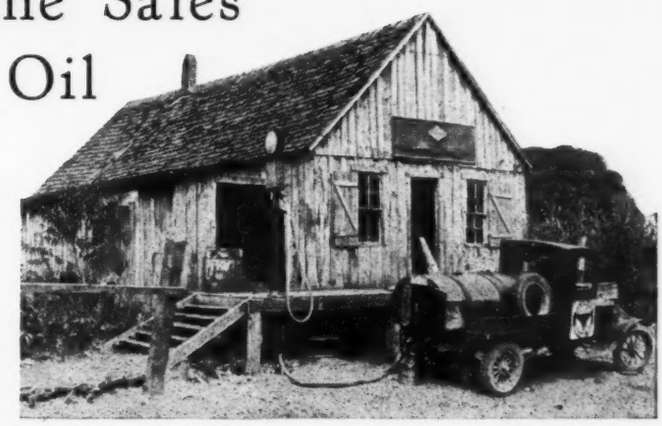
It was the desire to correct this condition that set him trying to establish some way of figuring costs. He asked the refinery operating heads for costs of various processes and they gave him the answers out of their heads. He was convinced that these answers were not correct and he had not worked very long on his accounting system before he was able to prove they were wrong.

He found that the prices on the oils that could not be sold were being held too high while much of the products that commanded a steady market was being sold below the cost of production.

This convinced him that about the most serious weakness in a refinery was failure to know how much its products cost to manufacture.

Kerosene Tops Gasoline Sales For Some Tennesee Oil Jobbing Companies

By Ward K. Halbert
N. P. N. Staff Writer



Stratton & Bradley's store, 18 miles from Fayetteville, has a vending pump but sells nearly as much kerosene as gasoline in the winter months. Kerosene lamps are numerous and automobiles are scarce.

Nashville, Oct. 9.

HALF way from Chicago to Miami either by the Dixie or the Jackson highway, is a region where the Twentieth Century has wrought but little change. Slightly more than 100 years ago Andrew Jackson passed this way in pursuit of the Seminole Indians, and if he might retrace his steps today he would pass through spots upon which growing American industry has not encroached. Long stretches of the old Military Road have been paved and honored with Jackson's name but streams and trails and sometimes forests and farm houses are quite like they used to be, 100 years ago.

The automobile has come, indeed, but the horse and buggy has not passed away. Flivvers are garaged in the harness sheds and smoke houses of old plantation residences that still bear marks of the "Minie balls" of 1861,—Homes that the white folk call historic and the negroes declare are haunted. And along with the automobile, other modern things have come. Duck River valley, long has seemed the impregnable stronghold of the things that used to be, but now a line of new chestnut poles from Huntsville, Ala., to Columbia, Tenn., indicate that even the country people soon may have electric lights.

Kerosene is still a big item in the inventory of oil distributors in the hill country of Tennessee. There are not very many of them. The Tennessee Independent Oil Men's Association embraces all the jobbers in the state but three and the membership is only 55. Most of these independents do business in one or more towns of fair size but they are obliged to run tank wagon routes out into the country where much kerosene is consumed. The Elk Oil Co., of Fayetteville, Tenn., has one tank wagon route where kerosene sales often exceed the gasoline. Near the end of this route is a country store operated by the partnership of Stratton & Bradley. They are visited by the tank truck once each month in the winter time and they usually take 150 gallons of gasoline and 100 of kerosene.

The small gasoline sales on this route are due to the number of horses and buggies and the comparative scarcity of cars. The relatively large volume of kerosene delivered in this part of Lincoln County is burned in lamps, not tractors. Residences are lighted with what the consumers call "coal oil." Kerosene is not much used as fuel for cooking. However a great deal of it is wasted as kindling in old-fashioned wood burning kitchen stoves.

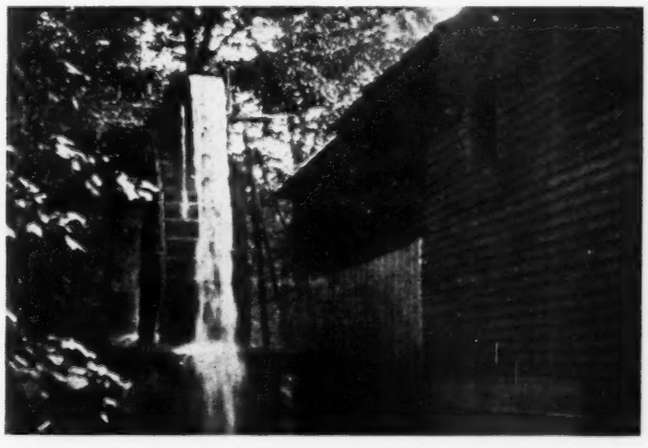
Easy Fire Building

THERE is no way to estimate accurately what the indolence of negro domestic servants means to the southern jobbers in kerosene volume. Irrespective of hazard, rather than take the trouble to start a wood fire in a kitchen range with waste paper and splinters, many colored servants saturate the heavy wooden sticks with kerosene and start the fire with a match. Some rural cooks keep a tin can of kerosene standing near the stove with a half-dozen corn cobs soaking in it. When a fire is desired, one of these cobs is lighted with a match and fuel piled over it. With such methods as this, domestic servants use as much oil to kindle fires as they do to light the house; some estimate that it is more.

Tractors are not practical in the Tennessee hills. Some lands are cultivated where it is difficult, (sometimes impossible) to harvest the crop except by turning live stock in the field and letting them eat the grain where it grew. The well-to-do farmers with level land in the river bottoms have bought tractors in recent years to some extent, but kerosene is still considered a "winter product" for the oil man in the small towns of the middle and eastern parts of the state.

Any one who might have accompanied J. A. Stubblefield in his regular Tuesday tank wagon route last week would have

This is the kind of country the Elk Oil Co., of Fayetteville must penetrate frequently to introduce Red Hat gasoline in the "Pea Ridge" section of middle Tennessee. Often the road and some stream occupy the same space for miles.



A. Benson's grist mill. The 28-foot home-made water wheel makes power to grind corn into meal. His gasoline gallonage runs 100 gallons a month so he has no "curb pump."

The first customer was 12 miles from the bulk plant and he took 10 gallons of kerosene. He was a little quarrelsome because the truck had not come the day before. He ran out of "coal oil" and his customers were disappointed.

had the opportunity to see the oil distributing business as it was 10 years ago in most states. All of the routes of the Elk Oil Co., and other distributors in Fayetteville, are not like this by any means. Some of them serve city trade and others pass through rich agricultural regions for 20 or 30 miles, but Stubblefield's Tuesday route is a cross section of the past.

Stubblefield loaded out from the bulk station with 230 gallons of gasoline and 110 gallons of kerosene and three milk cans of motor oil (one heavy and two medium) and a spare tire. He took a general-direction road south and east, and his destination was "the top of the ridge"; the ridge being that peculiar geological formation technically called Highland Rim and locally termed Pea Ridge. There was one stop enroute to replenish the water in a boiling radiator, but the first halt for business was in front of a country store at a railroad crossing called Brighton. It was 12 miles from the bulk plant by the dirt road and probably 500 feet higher. The journey had consumed an hour and a half.

A Part-Time Vocation

THE store was closed, door locked and windows barred, when the oil truck halted at the door. Persistent bearing down on the horn brought the merchant's head clerk from a nearby well where he had gone to draw water with an old fashioned contrivance, a rope and windlass. He came slowly to the store, bringing the water with him. After exchanging salutations with the tank truck driver he opened the door and announced that he would buy 10 gallons of kerosene.

"Where is the chief this morning?" Stubblefield inquired.

"Oh, he's down in the holler stripping cane for Old Man Holcomb. He says he wants to work him out a few molasses."

The next stop was at A. Benson's grist mill, four miles along the top of the ridge and down in a small cove. A Benson's grist mill is an industry like which there are few left in the whole country. A home-made water wheel 28 feet in diameter supplies the power. There is no smoke to mar the scenery. Mr. Benson buys no coal. The backfire of a gasoline engine is seldom heard. When Mr. Benson wants power he turns on the water from an everlasting spring that rises in the hills a few feet above the mill.

The power is used for grinding corn into meal. The plant is not equipped to manufacture flour. A thin stream of shelled corn flows down a trough to a hopper where it is fed between two mill stones, one revolving on top of the other, just like the first grist mill that built in the United States. There are said to be several grist mills of this size in this part of the country. What the natives need with so much corn meal is not a mystery locally, and elsewhere it is nobody's concern. Suffice it to say that while these grist mills convert the local corn crops into meal, grinding for toll, country stores in the neighborhood handle vast quantities of sugar. Many a brave man has perished in years past, trying to satisfy his curiosity about what these hardy mountaineers make from corn meal and sugar.

Gasoline at the Mill

A BENSON & CO. sells 100 gallons of gasoline a month and fully half that much kerosene, even in the summer time when the farmers go to bed at dark. Most of the kerosene is burned by the wives when they prepare breakfast, for during the harvest season the male members of the family must be in the field by daybreak. In the fall of each year the public schools of Tennessee declare what they call a "cotton vacation," suspending class work until the children of the rural schools have picked the cotton. Mr Benson sells his gasoline and kerosene from a big tin tank. He puts the gasoline in his customer's cars with a bucket and a funnel. He has considered installing a big red pump, thinking it would increase his gallonage. Currently he is the only re-selling agent on the route who does not have a pump.

One corner of the ground floor of the Benson grist mill is occupied by a mercantile establishment. He runs it himself. The mill does not take all of his time. In fact the mill almost runs itself when once it is started turning. The store sells chewing and smoking tobacco, a small line of canned meats, some dry goods in the bolt, brooms, lamp wicks and chimneys, and other simple needs of the household in the hill country. That 100 gallons of gasoline per month probably represents as much of a cash turnover to Mr. Benson as any other single item of his stock of merchandise — exclusive of the grist mill, of course.

A 30 Gallon Order

THIRTY gallons of kerosene were delivered at the fourth customer's store. Customer number three was Stratton & Bradley, previously mentioned. The great part of the tank truck load was delivered in the Stratton & Bradley tank. This firm operates a grist mill, using gasoline power, and consumes a good part of the gasoline it purchases. These two young merchants buy cotton, traffic in all manner of home produce, operate the grist mill and the neighborhood scales, not to mention some agricultural ventures of their own. They are busy, so their mercantile establishment, shown in accompanying picture, is not always open. It was closed when the oil truck arrived. It was opened presently by one of the partners, however, and several retail sales were made while the tank truck was being emptied.

Comparatively little selling is done in this part of the country by the oil jobbers to the farmers direct. Farm houses, if isolated, insist on buying kerosene from the tank truck if one passes the door, but tank wagon prices are not allowed to a farmer as a rule unless he owns a tractor and buys in drum lots, and such customers are scarce. There were none on Mr. Stubblefield's Tuesday route. When Mr. Stubblefield passed back by Benson's Mill that afternon on his way to Fayetteville he took Mr.Benson's bank book and week's receipts at the store to be deposited next day at the bank. He did not ask for any written token or receipt whatever when he handed the tank wagon driver this deposit running into hundreds of dollars, although he knew he would not see the man for a week.

Natural Gas Line Should be Buried To Minimize Temperature Fluctuations

By E. L. Rawlins
Associate Natural Gas Engineer, Bureau of Mines

PIPE lines through which natural gas is flowing should be buried in order to minimize fluctuations in the temperature of the gas, as these fluctuations have several harmful effects.

One of these effects is to decrease the accuracy of measurements of gas volume. In order to meter properly the quantity of gas flowing past any point in a transmission system, it is necessary to know the temperature of the gas. If the temperature remains fairly constant the gas flow can be measured with a close degree of accuracy, but if it fluctuates rapidly, close measurement is impossible.

The accuracy of volumetric measurement is greatest when the temperature of the gas is nearest to the standard temperature of 60°F. This is due to the necessity of applying a correction to the apparent volume of gas as measured at other temperatures, in order to determine the true volume at 60 degrees. There is usually more or less error introduced in making such corrections, and this error is greater the larger the correction.

A second and very important effect of fluctuation in temperature has been observed, when the leakage of gas from transmission lines constructed on top of the ground was compared with that from lines covered with earth. The rapid temperature fluctuations, when the lines are exposed to the rays of the sun, cause expansion and contraction in the joints and increase the leakage of gas. This effect has been more noticeable in lines with screwed and rubber-coupled joints than in welded lines.

Records Kept for Year

IN order to estimate the magnitude of these temperature fluctuations, records were kept for a period of one year of the temperatures of natural gas flowing in buried and uncovered pipe lines. It is hoped that these records will serve as a basis for explaining differences in leakage rates from buried and uncovered transmission lines, "breathing losses" in gasoline pipe lines, and apparent errors in natural-gas measurements.

Records were obtained, for a period of one year, of the temperature of the gas flowing in a 3-inch pipe line lying on top of the ground, and of the gas flowing in a near-by 6-inch line that was buried to a depth of 18 inches. Recording thermometers, of the external bulb type which had been calibrated against standardized mercurial thermometers, were used for the temperature measurements. The bulbs of the thermometers were inserted through special stuffing boxes so that they were in direct contact with the gas flowing in the pipe lines.

The results of the tests are shown in Fig. 1. Curves 1 and 2 show respectively the maximum and minimum daily temperatures of the gas flowing in the

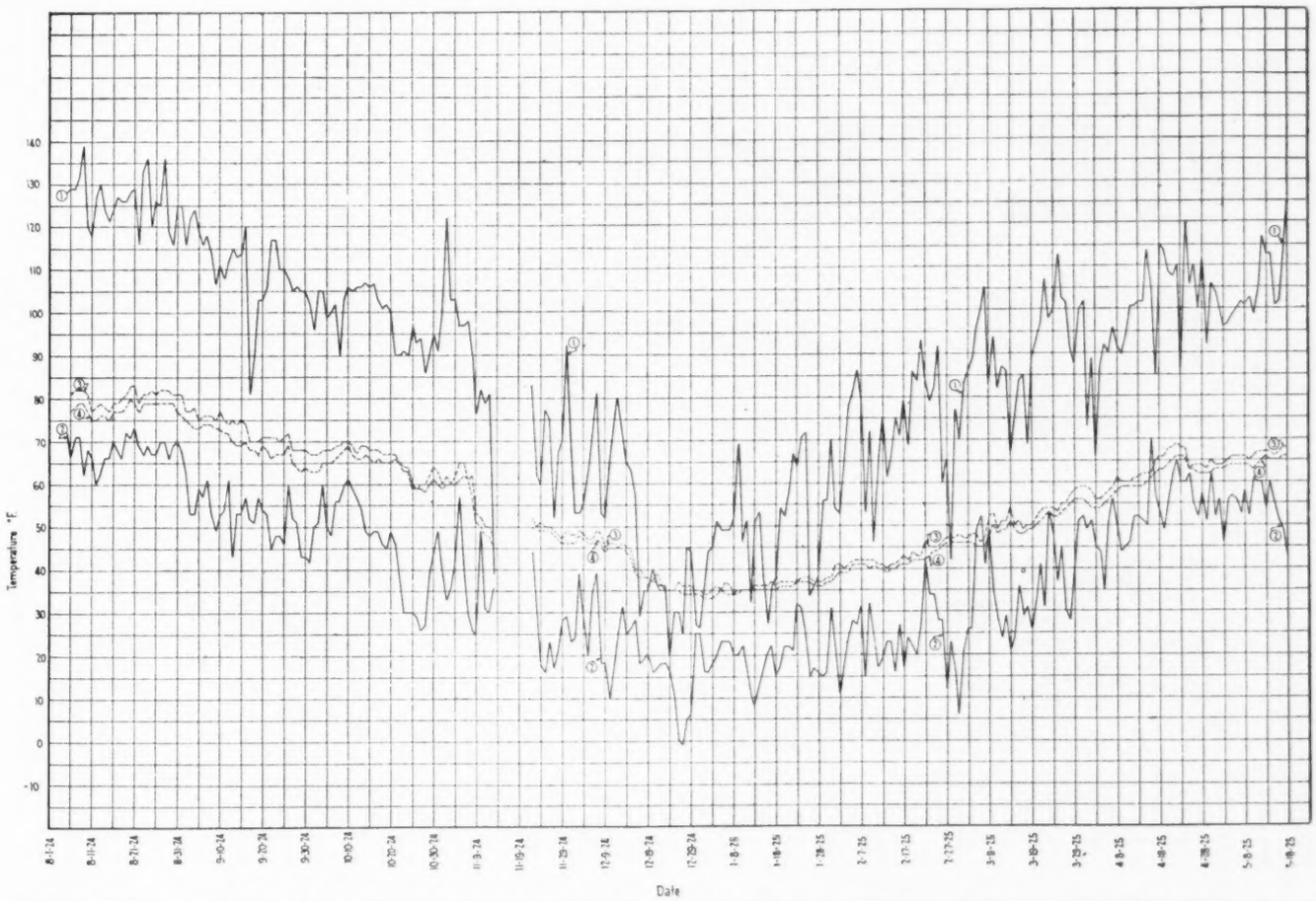


Fig. 1.—Daily temperature variations of flowing gas in covered and uncovered pipe lines. 1—Maximum daily temperatures of gas flowing in a 3-inch uncovered line. 2—Minimum daily temperatures of gas flowing in a 3-inch uncovered line. 3—Maximum daily temperatures of gas flowing in a 6-inch line covered to depth of 18 inches. 4—Minimum daily temperatures of gas flowing in a 6-inch line covered to depth of 18 inches.

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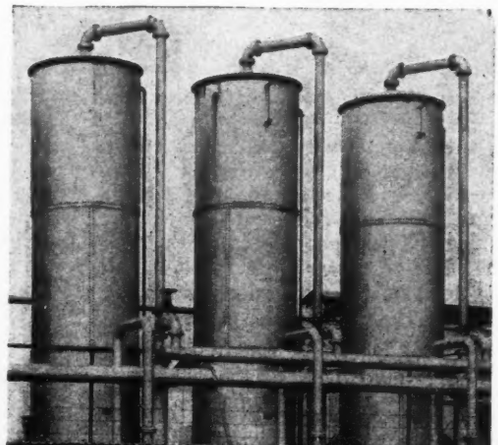
With a record of actually increasing production 3500 gallons per day, two Campbell Oil-Froth Absorbers in the San Joaquin Field paid back their cost of installation within 14 days. That represent an earning of almost 2500% on the investment.



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3-inch uncovered line; and curves 3 and 4, the maximum and minimum daily temperatures of the gas flowing in the 6-inch covered line.

As shown on the chart (Curve 1) the temperature of the gas flowing in the 3-inch uncovered line reached a maximum on Aug. 8, 1924 of 139°F. On the same date the minimum temperature was 65°F. (Curve 2). The temperature of the gas thus fluctuated during this day through a range of 74 degrees. On Dec. 31, 1924, a maximum daily temperature of 26°F. (Curve 1) and a minimum temperature of 25°F. (Curve 2) were recorded; thus the fluctuation during the day was only 1 degree. However, the average daily fluctuation for the entire test of gas flowing in the 3-inch uncovered line was about 65 degrees F.

On Aug. 8, 1924, a maximum temperature in the uncovered line of 139°F. was recorded. The minimum temperature of 1 degree below zero was recorded Dec. 27, 1924. The maximum annual fluctuation, therefore, for the gas flowing in the 3-inch uncovered line was 140 degrees F.

In comparison, as indicated by curves 3 and 4, the average daily temperature fluctuation of the gas flowing in the 6-inch buried line was only about 2 degrees F. while the annual fluctuation was only 45 degrees.

High Leakage Rates Explained

THESE results explain the high rates of leakage that often occur from field lines and other lines that are not covered with earth; and show the importance of ditching and burying pipe lines. A striking example of this was found in a leakage survey recently completed. A transmission system in a hilly district was tested for leakage. In the roughest part of the district where the lines were uncovered on account of the high initial cost of ditching, the annual leakage averaged about 2,000,000 cubic feet per mile of 3-inch line at 100 pounds per square inch gage pressure. On the same transmission system, where the topography was more favorable for ditching, and the lines were buried, the annual leakage varied from only 100,000 to 200,000 cubic feet.

The results also explain the difficulty of obtaining correct volumetric measurements with orifice meters under conditions of widely fluctuating temperature, as in uncovered pipe lines. In practice, the only data recorded generally for volumetric measurement with orifice meters are the differential and static pressures.

A coefficient, which is based upon a temperature of 60°F., is used for computations. An appreciable error is introduced in the volumetric measurement, due to the temperature differences. Even if corrections were attempted for the temperature changes, it would not be possible to correct the volumes when the temperature fluctuated rapidly.

In applying a correction factor that would correct the volume to a base temperature of 60 degrees, there is more

or less error introduced even if the fluctuation is not great. The curves on the chart in Fig. 1 show that the temperature in the buried line varied less from the standard base of 60 degrees F. than did the temperature in the uncovered line, and, as a result, more accurate measurements of volumes could be obtained in the buried line.

The results shown on the chart also are applicable in the construction of gasoline pipe lines, and show the importance of burying lines to eliminate undesirable "breathing losses."

These temperature tests were conducted in only one locality, and the actual data therefore are strictly applicable only to the one set of conditions. However, the general effects of temperature variations are the same in any part of the country, and the results in this particular case indicate what to expect under other conditions. Further study is needed to determine the exact economical depths of cover required to offset undesirable temperature fluctuations under various operating conditions, and the Bureau hopes to continue the study during the next year.

This investigation was conducted under the direction of the Bureau of Mines with the cooperation of the State of Oklahoma.

The writer is indebted to E. O. Bennett, formerly natural gas engineer, I. B. Williams, formerly associate natural gas engineer, of the Bureau of Mines, and E. N. Armstrong, engineer, Indian Territory Illuminating Oil Co., for valuable assistance in conducting the field tests.

West Penn Oil Opens Pittsburgh Office

R. S. (Russ) Campbell

WARREN, PA., Oct. 4.—A Pittsburgh, Pa. office in the First National Bank Bldg. has recently been established by the West Penn Oil Co., Warren, with S. M. Hamilton and R. S. Campbell in charge.

S. M. Hamilton

Mr. Hamilton and Mr. Campbell have worked together in the oil business for several years. Seven years ago they began with the Carhill Petroleum Co., and later joined the Pittsburgh Oil & Refining Co. at Corapolis, Pa., when those two companies consolidated. With the recent acquisition of the latter company by the Waverly Oil Works Co., these two men were again on the job together.

On Sept. 1 they became direct representatives for the West Penn company.

Opens Stations in Alaska and B. C.

LOS ANGELES, Oct. 11.—Four service stations in Alaska have been opened by the Union Oil Co. of California recently. They are at Ketchikan, Craig, Petersburg and Wrangel, all in the southern part.

The company has also opened 11 service stations in British Columbia to handle requirements of the fishing fleets operating on the coast and the rivers of the province, according to the "Daily Oil Digest" of the American Petroleum Institute.

Discuss Powdered Coal Burning

NEW YORK, Oct. 11.—In its efforts to find an economical substitute for fuel oil for marine use, the Fuel Conservation Committee of the U. S. Shipping Board heard representatives of the Peabody Engineering Co. and the Combustion Engineering Co. on Sept. 24 describe their respective apparatus designed to burn pulverized coal, according to the "Daily Oil Digest" of the American Petroleum Institute.

LAPEER, MICH.—Citizens Oil Co., with general offices here, has taken over the bulk plants of the Sinclair Refining Co. for this district. C. W. Groves and R. W. Halpin are with the Citizens company.

Professional Card Directory

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1. Oils without Animal Fats—these do not eliminate jerky chattering, so destructive to the bands.
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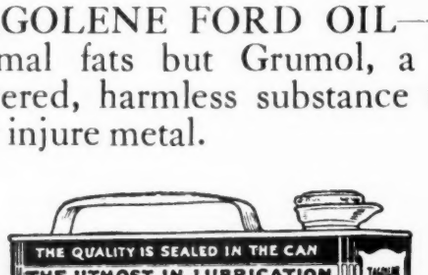


TAGOLENE

MADE BY THE REFINERS

Panhandle Field Gives Operators Many Problems in Producing Oil

By E. J. McKee
Production Engineer, Phillips Petroleum Co.
Before Meeting of Petroleum Division, A. I. M. E., Tulsa.
Oct. 11-12

The author in this paper carries through the usual routine of drilling a typical well in the Panhandle field of Texas, presenting it in the form of listing the material used, method of drilling and time required. The latter part of his paper contains valuable information on the nature of the crude oil, whose paraffin content raises the chief producing problem of the district.—Editor.

THE area which will be discussed is that portion lying south of Canadian River in Hutchinson county, Texas, covering approximately 10 miles east by west and four miles north and south.

The development is carried on in the usual manner pursued in standard tool operations. No outstanding divergence from the usual methods is necessary, wells being completed in from 35 to 55 days to a depth of approximately 3,000 feet; most of the time being lost in the upper part of the hole and in most cases by time taken up in driving pipe of larger sizes. After a depth of about 1500 feet has been reached they have little trouble. A comparison of 13 contractors drilling for Phillips Petroleum Co. gave the following averages: Drilling time from 32 to 63 days with a daily footage of from 49 to 87 feet per day. The rigs furnished are National Turnbuckle Type with 6 inch irons and steel wheels.

Casing

The casing used in our No. 6 Coble, Sec. 13, Block Y, M & C Survey, Hutchinson county, is a fair comparison for the average casing needs:

Size	Weight	Amt.
20" dia.	90 lb. per ft.	20' 5"
15"	70 lb. "	460'
12½"	50 lb. "	684'
8¼"	28 lb. "	2239'
6 ⅝"	24 lb. "	2888'

Formation Record

Sand light soft	30	30
Red rock red soft	100	130
Sand light soft	15	145
Red rock red soft	55	200
Sand broken light soft	10	210
Red rock red soft	200	410
Sand water light soft HFE	5	415
Red rock red soft 15½	180	595
Quick sand red soft	30	625
Gyp light soft 12½ at 675	65	690
Shale blue soft	10	700
Salt light soft 2 BW 720	20	720
Sand broken light soft	10	730
Lime broken light soft	70	800
Salt light soft	115	915
Red rock red soft	770	1785
Slate light soft	135	1920
Shale blue soft cave 1880	10	1930
Salt light soft	55	1985
Lime light hard	15	2000
Shale blue soft	5	2005
Red rock red soft	80	2085
Shale blue soft	70	2155
Red rock soft 8¼ 2004	45	2200
Lime broken light hard	130	2334
Shale blue soft	26	2360
Lime light hard	115	2475
Lime dark hard	125	2600
Lime light hard	25	2625
Lime broken dark hard gas 2775	150	2775
Lime broken brown hard 6⅝ @ 2882	107	2882
Lime light hard first oil 2920	38	2920
Sand light soft	7	2927
Lime light soft	5	2932
Lime	32	2964
Total depth		2964

Wherever possible all large pipe is pulled after cementing of either the 15½ or 12½ inch, as the case may be. In this particular well the 15½ inch parted after the 460 feet had been run, shifting sands encountered at 210 feet caused the parting, necessitating running 12½ inch at 490 feet, 12½ inch being driven to a total depth of 675 feet where it was cemented with 50 sacks of cement and 10 gallons of Konset, leaving 10 feet of cement in the casing and was allowed to stand for 72 hours, thus giving a complete shutoff. In this particular hole it was not necessary to run 10 inch to shut off dry cavings. Caving encountered at 1880 feet gave some trouble but the driller was able to overcome it and carry the 12½ inch hole to top of the lime which was reached at 2200 feet, where 8¼ inch was set. The 8½ inch hole was carried until 2882 feet, where 6⅝ inch was set and cemented with 50 sacks of cement and 15 gallons of Konset; this cementing not being done until after the first slight trace of oil had showed up, thereby shutting off with the cement all of the upper gas which is contaminated to a more or less extent by hydrogen sulfide. A consensus of opinion in our organization is that the tremendous volumes of gas encountered above the oil in the Panhandle field is directly connected in some place wtihin the area to the oil zone, as the rock pressure on the dry gas zone is the same as that of the oil zone and the fluid height of the oil when it comes at rest is about equivalent in weight to the rock pressure on both zones. Therefore, we have reasoned along this line, that should this be the case, by the cementing of the upper gas and conserving its volume and pressure and making it apply its natural pressure on the oil zone, it would have a tendency to help migration, thereby giving a greater per acre recovery.

Operations

In carrying on operations in this field a great number of obstacles have been encountered that have not heretofore had to be considered in large operations, which necessitates an individual unit for each well's operation. The following is a standard type of pumping unit used in our Panhandle operations.

82 foot National Turnbuckle derrick complete with 8 foot steel wheels.

6 inch irons, corrugated steel belthouse, 16 x 16 sectional steel engine house, cement floor, 35 HP Bessemer gas engine with circulating pump and reversible clutch,

2 inch upset tubing,
⅝ inch Axelson rods.

Tankage

THE vapor proof type tanks in use in Panhandle are either Mount-Cooper 10 foot x 15 foot riveted steel tanks or Perfection 15 foot x 8 foot bolted steel tanks, all equipped with approximately 100 feet of 2 inch wrought iron steam coils. Storage tanks are 55,000 barrel steel with steel roof supports and electric weld steel roofs, equipped with 2400 foot of 2 inch wrought iron pipe steam coils.

Production

A FEW of the wells in this area do make their production by natural flow but in the majority of cases it is necessary to resort to some artificial means, either swabbing or pumping on the beam. On two of our wells on which we have taken the load in pounds, we found the following to exist: No. 7 Coble producing 200 barrels with 2 inch upset tubing and ⅝ inch rods, no water or paraffin, showing a lift of 12,000 pounds. No. 8 Coble with the same equipment and the same amount of production, but production being 2 per cent water and 3 per cent paraffin and B. S., showed a lift of 15,500 pounds.

In pumping operations we have a great deal of trouble caused by paraffin, necessitation pulling rods every two or three days to remove accumulation which has collected there. By pulling rods before a large amount has had time to be deposited we get away from more tubing jobs. In a few cases where rods were not pulled for a period of ten days or two weeks it was necessary to pull tubing and rods together and steam tubing to remove the deposits of paraffin. In a few cases after wells have been pumped for some time the time limit on pulling rods to remove paraffine increases—one well in particular going as long as three weeks before rods were pulled, showed a small

deposition when they were pulled. When first put on the pump for a period of two weeks it was necessary to pull rods every two days and the tubing every six days to remove the paraffin deposit which would accumulate.

Character of Crude

PANHANDLE crude in most cases is of a straight paraffin base and the deposition of this paraffin in the casing, tubing and rods causes the trouble. It causes unnecessary pulling of tubing and rods and gives a great deal of trouble to the swabbing wells in the excessive load on the swab. The characteristics of this wax are as follows:

Gravity	12.5° Be.
Melting Point	140° F.
Initial Boiling Point	230° F.
Water	3%

It contains suspended sand, shale and sulphur, consisting chiefly of pure paraffine wax and upon heating to distill gives off hydrogen sulfide. Concentrated sulfuric acid has little action on the wax even when heated. All of the waxes encountered are to a great extent chemically inert substances, and to date we have been unable to find any chemical that will react with it. The only thing that has any apparent effect on it is heat and in all cases where chemicals were used and had a dissolving effect, the effect was due to the heat of reaction with the substance used and the water contained in the paraffin, not to the effect of the chemical on the wax.

The temperature of the oil coming from the wells in some cases is as low as 58° F. and to date we have been unable to get any reliable data as to the sand temperatures, but from close observance of the tubing, paraffin begins to deposit about 700 feet from the surface and is probably due to refrigeration caused by the expansion of gases at this point. In the transportation of the crude from the well to the receiving and storage tanks it will be necessary to have all lines insulated in some manner to protect them from low atmosphere temperature in the Panhandle during the winter months. What the insulation will be has been a source of a great deal of discussion and research, endeavoring to find something that is effective, as well as economically possible for its use. In our operations we expect to bury all lines with a covering of at least 32 inches of earth, the line to be laid on blocks in the ditch and parallel with a one-inch steam line for applying heat if needed. This heat will be supplied from a 35 HP mounted boiler, to be moved where needed and will be a part of each lease equipment.

By means of topographic surveys we have enedavored to place all flow and receiving tanks so as to get a grade of sufficient fall that lines will clean themselves by gravitation.

Effect of Heating on the Congealing Temperatures of Crude Oils

EIGHT samples of Texas crudes were examined in a study of the effect of heating on the congealing points. The viscosities and pour point were determined and used as a means of getting some mental picture of the molecular aggregations in these crude oils. Heating to 190° F. seems to break up these molecular aggregations, or in other words, depolymerizes the higher paraffins, and consequently, the crude oil becomes more limpid and has a lower congealing point. But on standing several days at room temperature, there is a tendency for the crude oil to go back to the original state, approaching the viscosity and pour point of the original crude oil. The speed of this repolymerization varies with different crudes depending on the constitutents of the crude. In a few cases there is an apparent decrease in viscosity which is due to the settling out of small amounts of asphaltic material. This is strained out in pouring into the Engler viscosimeter. The congealing points and pour points tend to become the same as that of the original crude.

Perhaps neither the pour point nor the viscosity at various temperatures, as ordinarily determined, tells us what we are after in getting the congealing temperature of the oil. The time element is not taken into consideration. Rapid cooling, as done in these tests, tends to give a supersaturation or paraffins. This is evidenced in the difficulty of checking pour tests and viscosities when the oil has stood in the instrument for different time intervals. Parraffin wax requires hours and even days to crystallize out and the latter is what is met with in practice, namely the slow crystallization of paraffin through the course of several days.

Hence, it would seem in the preliminary tests impractical to try to heat a crude oil below the cracking temperature in order to prevent paraffin from crystallizing out in the tanks or pipe lines. It would have a desired temporary effect, but the question is, is it worth the cost of heating if the oil is going to be in transit over a very long period, where it will have to stand at points for several hours.

As there are so many problems confronting the operators in the Panhandle fields, it is impossible to outline at this time any definite method of procedure, and until the field has been in operation for some time and experiments carried out it will be more or less a cut and try program when it comes to pumping over the entire field, searching for some efficient and economical operating methods whereby we can produce oil and show a column on the right side of the ledger.

Results of Heating Panhandle Crude Oil

	Gr.	Visc.	Cong.	Pour.
1. J. H. Middleton, No. 1 Weatherly				
Original Crude	38.6	283 sec.	70° F.	62° F.
Heated to 190° F	38.2	115 "	50° (?)	40° F.
" " " after 24 hrs		125 "	—	50° F.
" " " " 8 days.		156 "	70° F.	60° F.
2. J. R. Phillips, No. 1 Weatherly.				
Original Crude	27.5	232 sec.	—	82° F.
Heated to 190° F.	27.2	206 "	—	80° F.
Heated Sample after 8 days		220 "	—	80° F.
3. J. R. Phillips-Currie, No. 1 Smith.				
Original Crude	39.8	124 sec.	60° (?)	58° F.
Heated to 190° F.	39.3	103 "	—	Below 20° F.
Heated sample after 8 days	39.2	118 "	65° F.	60° F.
4. Lucky Ten Oil Co., No. 1 Smith.				
Original Crude	39.3	115 sec.	About 55° F.	45° F.
Heated to 190° F.	39.2	95 sec.	" 50° F.	38° F.
Heated sample after 8 days	39.2	113 "	55° F.	45° F.
5. McIlroy Oil Co., No. 2 Smith-Capers				
Original Sample	35.5	475 sec.	About 65° F.	58° F.
Heated to 190° F.	35.3	185 "	—	Below 20° F.
Heated sample after 6 days	35.4	430 "	—	60° F.
6. McIlroy Oil Co., Nos. 1 & 3 Smith-Capers.				
Original Crude	36.5	1800 sec. (ap.)	—	70° F.
Heated to 190° F.	36.4	171 sec.	" 40° F.	32° F.
Heated sample after 3 days	36.4	324 "	" 65° F.	58° F.
7. Phillips Pet. Co., Block 62, No. 2				
Original Crude	35.4	677 sec.	82° F.	78°F.
Heated to 190° F.	35.5	297 "	54° F	45° F.
After 4 days	35.2	290 "	60° F.	55° F.
8. Phillips Pet. Co., Block 62, No. 1.				
Original Crude	37.8	358 sec.	78° F.	72° F.
Heated to 190° F.	37.6	121 "	35° F.	26° F.
Heated sample after 4 days	37.6	210 "	—	45° F.

Oil Man and Banker Dies

MEDORA, ILL.—A. L. Carter, president of the Blue Line Oil Co., Medora, and well known banker, auctioneer and stockman, died on Oct. 1 after an illness of over four years. Mr. Carter was also the first national president of the Lone Star Highway Association, which extends from the Great Lakes to the Gulf.

NORTH TARRYTOWN, N. Y.—J. M. Fox, proprietor of "The Stopping Place" at Peekskill, N. Y., has taken on the distribution of Ward Premium Kerosene, a product of the Ward Oil Co., Inc., North Tarrytown, according to William A. Ward, president.

Mr. Fox, who was formerly a trustee of the village will also handle Rex fuel oil and Marland super motor oil.

Localizing National Ads By I. O. M. A. Member

GADSDEN, ALA.—Frank L. Cathey, manager of the Alabama Oil Co., Gadsden, Ala., whose company is a member of the Independent Oil Men of America, has developed an original plan of getting local benefit of the association's national advertising. He attends personally to seeing that every subscriber of the Saturday Evening Post in Gadsden has a look at the Spread Red Eagle and the Red Hat advertisements in the Post, every time they appear.

Like all the other I. O. M. A. members, Mr. Cathey knows in advance when the ads will appear. Raymond Shaw of Chicago, director of publicity of the I. O. M. A., notifies all the members by circular letter, usually inclosing a copy of the forthcoming advertisement. The circular shows also the page number in the magazine where the advertisement will be. As soon as he has this information, Mr. Cathey makes the earliest possible appointment with the local Saturday Evening Post distributor. When the magazines are delivered to the news dealer and before they are distributed, the following message is printed on the outside front cover with a rubber stamp:

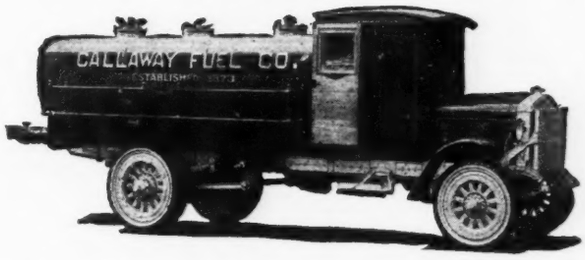
See Our Advertisement
on Page No. 96
The Alabama Oil Co.

Of course, the page number changes on the I. O. M. A. advertisement from time to time, but the page number on this robber stamp can be changed like an ordinary dating machine. After the message has been stamped on each magazine to be sold or distributed in Gadsden, another stamp is applied on the face of the advertisement itself. That simply fixes the words "The Alabama Oil Co." on the margin of the page that carries the ad.

For the privilege of thus hooking up with his national advertising, Mr. Cathey pays the news dealer 1 cent per copy and furnishes somebody to do the work. With big signs at filling stations and curb pumps, and with poster panels at bulk plants and elsewhere in town, The Alabama Oil Co. is making a thorough job of connecting up local business with the national advertising campaign. The rubber stamp idea is not limited to the I. O. M. A. campaign. Mr. Cathey features Alemite greasing at his biggest filling station in Gadsden and the local news dealer permits him to call the attention of the reading public to the Alemite advertisements in national magazines also, at 1 cent per copy.

In the case of the Alemite advertisements, Mr. Cathey is not notified in advance of the page number and date of the magazine in which the ad will appear. The news dealer examines the advertising index in the magazines as they arrive and if one contains an Alemite advertisement he telephones Mr. Cathey in time to get the stamping done before the magazine's date of release.

Heil Tanks
for Motor Trucks



HEIL TANKS for FUEL OIL. This is a 1,200 gallon, 3 Compartment, semi-elliptical fuel oil tank mounted on a 3½ ton 162″ wheelbase Sterling. Heil Fuel Oil Tanks are in service all over the United States. Send for Bulletin 153.

WAVERLY has always used Heil Tanks. The distinctive appearance of this tank gives it unusual value as an advertising medium. Safety features, quick unloading, ease of handling buckets and oil cans, are always given consideration.

This 800 GALLON HEIL TRUCK TANK, semi-elliptical in shape, is mounted on a Federal Knight chassis. It is fitted with side racks, integral can box with side-swing doors, 2″ piping, hinged bumper, and adjustable sills.

Send for our Price List and Tank Catalog.

THE HEIL CO.
1238-50 26th Ave.
Milwaukee, Wis.

FACTORY BRANCHES: CHICAGO, PHILADELPHIA, BOSTON, NEW YORK
One of our Twenty-five Distributors is near you
Manufacturers Steel Dump Bodies, Hoists, and Tanks for Motor Trucks

Unit Operation in New Pools has Many Advantages Over Usual Method

By I. L. Dunn and James O. Lewis
Oil Recovery Engineers and Operators, Tulsa, Okla.
Before Meeting of Petroleum Division, A. I. M. E., Tulsa, Oct. 11-12

The authors are authorities on increasing recovery of oil. Mr. Dunn pioneered in the application of compressed air to oil sands, this being done in the Marietta district of Ohio. Mr. Lewis has been known in this connection for a number of years because of studies made of methods of rejuvenating old fields while he was with the Bureau of Mines and because of original work performed since becoming a member of the Dunn-Lewis company. This firm has had considerable experience in setting up systems of unit operation on old pools; here they discuss the advantages to be gained by handling a field in that manner from the time of its discovery.—Editor.

BY unit operation is meant the developing and operating of oil pools under one management so as to make possible the application of the best principles of business, engineering, and science. The proposal is to do away with the division of ownership of the oil underground based upon property lines at the surface and to recognize the fact that a pool of oil is a natural and invisible unit that should be operated as such for the common good

But, as unit operation upsets the customs of the industry and affects public policy, it is incumbent upon those of us who advocate it to show beyond reasonable doubt that unit operation will result in worthwhile gains to both the property owners and the public. The purpose of the writers is to set out briefly their conceptions of the benefits to be derived from unit operations in new pools without reference to any of the proposed means of consolidating the properties. Use is made of both their experiences and the proposals of the many others who have written or spoken on this subject.

Natural conditions vary widely in the different oil fields, and the exact methods of unit development and operation must be varied accordingly. Also the economic value of unit operation will vary, being exceedingly large under some conditions and much less under others. It is not possible nor desirable in this paper to cover more than the commoner conditions and to illustrate by some examples, nor is this paper to be considered more than a preliminary presentation on the subject for present methods of the industry are based upon competetive recovery, and it therefore is necessary for the industry to develop by research and experience new concepts and methods for operating under non-competitive conditions.

Common Types of Oil Pools

THE commonest type of oil pool is the one sand pool. The size may be from a few acres to several square miles. The oil is saturated with gas dissolved under pressure and the oil area is surrounded by water. When the pressure has been taken off and the pool the production declines and leaves the larger proportion of the oil to be recovered by artificial means. Sometimes the surrounding water encroaches and flushes much of the oil out of the sand, but most commonly such encroachment is negligible. Less commonly there will be an excess of gas not held in solution, which will be found as an area of free gas overlying the oil or occupying the higher parts of the structure. Typical of such pools are Cromwell and Teapot Dome. A third type of pool has several sands superimposed one over the other, each of which is to be considered as a separate pool. These sands may contain free gas only, or free gas and oil, or only oil with dissolved gas. Typical of such a pool was Cushing with all its complications of operation and conservation.

The main thing with respect to an oil pool is that the gas, oil and water moves with considerable freedom through each productive measure, and that the existence of the property lines established at the surface have nothing whatever to do with the distribution of the oil or gas, or with its movements under ground. A division of a pool by property lines is purely arbitrary and embodies only a right to place the surface equipment for drilling down to and extracting the oil and gas. The establishment of property rights on the surface, and the laws pertaining to such rights, never contemplated such a condition. In an effort to make a square peg fit a round hole, there was evolved the theory of oil and gas being fugitive substances. The inadaptability of our legal concepts of surface rights to the situation has led to the whole vicious system of competitive development and operation with its unnecessary expenses and losses in oil and gas.

Savings by Unit Operation

MANY of the advantages of unit operation are so obvious that they will suggest themselves at once to every oil man. These include the savings in organization, management, finance, purchase, and distribution of supplies, provision for roads, water supply or disposal systems, oil and gas lines, tankage, power plants, gasoline plants, and other savings to be made by large non-competitive operation over the duplication of twenty or even fifty or more individual operations in the same pool. By controlling the whole pool, if it be a large one, plans can be laid far ahead for the systematic development of the pool upon the most sound and economic lines. At present our oil fields are characterized by crude and makeshift engineering necessitated by rapidity of competitive development and the rapidity of declining production. Haste, regardless of expense, is the watch word in high pressure pools. With this competition removed, it would be possible to apply far better and more economical principles in development and operation. Without the control of an unusually large area in the Salt Creek Field, the Mid-West Refining Company would not have been able to establish its large central electrical plant.

The savings in location is also an economy often stressed. The writers believe that while this saving has sometimes been exaggerated, yet it is an important source of needless expense. An often unavoidable expense has been the drilling of wells in parts of the pool where they are not needed and are in fact detrimental to the pool. This applies particularly to pools where there is free gas as at Cromwell. As will be discussed in a later paragraph, the drilling of many wells there actually decreased the recoverable oil from this pool. Under non-competitive conditions such unnecessary and wasteful wells could be avoided and for other fields the spacing and positioning of the wells that will give the greatest profits can be worked out and applied to the natural and economic conditions in each pool. The drilling of dry holes or unprofitable edge wells can also be reduced. The spectacle of town lot drilling or of starting many locations simultaneously in a part of a new pool with the prospect that all may be dry or unprofitable could be dispensed with in unit operation.

Competitive Drilling Wasteful

FOR greatest natural recovery the wells should be placed close together and the field drilled up as rapidly as possible. But this entails excessive financial charges, drilling costs, tankage, and other expenses as well as often disastrous effects on the the market. Greatest natural recovery under present methods of production is opposed to greatest economy in devleopment and production. Under non-competi-

tive conditions it would often be possible to space the wells farther apart and drill them according to a program that would entail less expense and unfavorable effect upon the market, relying upon artificial pressure to make up for the loss in recovery occasioned by the wide spacing.

In producing the oil, similar savings can be made as in the development of the fields. The carefully considered program of development made possible by unit operation can provide also for the best condition for long lived and economic production. The same advantages in organization, finance, supplies, etc. will also apply; moreover, changes in the methods of producing oil that will become possible under unit operation promise to make radical changes in the cost of production. The additional profits that could be gained from utilization or sale of gas now wasted would lessen the unit expenses for producing the oil. It is also well known that the smaller the production of a well the greater the lifting cost per barrel; therefore, if methods of maintaining or increasing recovery can be applied that will not materially increase the total operating cost for the pool, the unit lifting expense will be reduced. The average lifting expense in 1923 for several large groups of properties averaging one barrel per well day was $1.40; whereas, for wells producing 10 barrels per day, the average lifting cost was 50 cents. Administrative and other expenses could likewise be reduced.

Important as are these savings in development and operation, the writers believe that they will be overshadowed by the increases in both natural and artifical producton made possible by such unit operation. There are a number of theories as to how the natural forces in the sand can best be taken advantage of to increase recovery. What will finally prove to be the best method for each condition cannot now be said, as this must be determined from further research and experience, but there is enough evidence to indicate clearly to very thinking oil man that usually the increase of natural recovery will be marked and often will completely change the outlook of a pool. In an old pool, best recovery cannot be obtained unless those applying artificial pressure, especially if it be air or gas, work together, an artificial recovery can be applied early in the life of a pool if it is developed as a unit.

Conserving Gas Pressure

UNDER the competitive conditions, the object is both to get the sand as soon as possible and to keep the daily production rate as high as possible. These conditions are seldom favorable for greatest ultimate recovery. It has been shown that by proper operation of a well the quantity of gas produced with each barrel of oil can be often reduced, which means that the total recovery will thereby be increased. In a flowing well, control is usually exercised by back pressure, but back pressure can be used only to a limited extent under competitive conditions. In some of the old fields, stop cocking the wells has had wonderful results; that is, when the wells get down past the prolific flowing stage, they are shut in tight for a period until the pressure builds up and then the oil is flowed off and the well shut in again, but the use of this principle also is limited unless the neighbors operate in like manner, as maintaining pressure on one property would force oil to offset wells.

The trend at the present time is toward flowing the wells by gas-lift. The cost of installing pumping equipment followed by the costly and troublesome operation, particularly in deep wells, has focused attention more and more to this means of production. Moreover, it has been shown that under favorable conditions and proper control both the daily and ultimate recovery can be increased. But the use of the gas-lift principle is now limited to the relatively short period in the life of the well between the period of natural flow and the period when the rock pressure becomes less than the pressure necessary to lift the oil out of the well. When this point is reached, the gas presure put in at the top of the well will keep the oil from entering the hole and it has, at times, caused nearby pumping wells to start flowing again. By maintaining the rock pressure in the sand by introducing artificial pressure through some of the wells, the gas-lift can be kept going much longer and at the same time both the daily production and ultimate recovery can be greatly increased. Such a method could not be succesfully applied except on large tracts.

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waste of both the oil and of the natural forces can take place, if the yield is not properly developed and operated. Under competitive conditions the operator who owns a lease in the gassy part of the pool will drill his wells and vent the gas in order to draw as much oil as possible to his property. If he drills a well that shows gas only at the start but later blows into oil, he congratulates himself, but such a proceedure is exceedingly harmful to the common interests and the small gain of the individual operator is overshadowed by the losses sustained by the pool. Under such conditions the pressure in the gassy parts of the sand will blow off quickly and then oil will feed into this unsaturated part of the sand which will mostly be wasted. The oil naturally recoverable is usually less than 20 per cent, and of this portion, 80 per cent is left unrecoverable in its new position; in other words, if 20 per cent is a normal natural recovery for the pool, a well that has blown into oil is recovering only 20 per cent of 20 per cent, or at the rate of about 4 per cent. For every barrel recovered from such wells, perhaps four barrels of recoverable oil is being dissipated in the former gas sand.

On the other hand, if the pressure had not been let off of the gassy parts of the pool, the gas would have forced its way through the oil producing parts of the sand into the wells on the lower parts of the structure, and this free gas would have been a means of increasing instead of diminishing the natural recovery. In such a pool, if the natural production was at the rate of one barrel for each thousand feet of gas, the increase in recovery for a million feet of gas blown into the air would have approached 1,000 barrels.

A triple loss is thus sustained by blowing off the free gas in a pool—the loss of recoverable oil by drawing oil in to unsaturated parts of the sand, the loss of oil that could have been recovered by letting the gass expand through the oil saturated parts of the sand, and the loss of gas and gasoline. A well in the gassy parts of the structure blowing off ten million cubic feet of gas a day may easily represent a daily loss of 10,000 barrels of recoverable oil from the pool.

Cromwell an Example

THE Cromwell field is the most striking recent example of such a condition. In their report on this field, the Bureau of Mines engineers list sixty wells with a total of 2,046,000,000 cubic feet of gas and 54,849 barrels of oil initially, or initial productions averaging respectively 34,000,000 cubic feet and 914 barrels, or an average gas-oil ratio of 37,000 cubic feet per barrel of oil. No average figures are available as to the gas-oil ratio in the arears without free gas, but it is reported on one lease as 2,500 cubic feet. If we double this figure it would still indicate that something like seven barrels of oil could have been recovered from adjacent parts of the field for each barrel produced from these sixty wells had it been possible to shut them in and cause the gas to vent into the wells in the saturated parts of the field.

In addition, there was lost unknowable quantities of oil that were drawn into the gas sand and there dissipated. Had these sixty wells not been drilled, some $3,000,000.00 might have been saved and the natural recovery from the field increased possibly between 25 per cent and 50 per cent. As it was, those owning these gassy wells felt compelled to operate in a wasteful manner to protect their own companies' interests; yet, the rest of the field could well have given them twice the oil they did produce to shut their wells in.

In a pool with complicated conditions as at Cushing, where there were four important producing oil sands and several minor gas and oil sands, and in which free gas occured in each one of the parts of each of the four important sands, the opportunities for decreasing expense and at the same time increasing recovery and profits would be particularly important. The history of Cushing is too well known to need repitition here. The writers believe that every informed oil man will agree that under unit control and with the knowledge we now have tremendously increased profit could have been obtained by the industry from this pool. Besides the profits from savings in costs and increases in production, the price of oil was cut to one-third, both for the oil in this field and all the other fields of this country for a period of nearly two years.

Even in fields where no free gas is reported, there will be wide differences in the gas ratios of the wells in different parts of the pool. One of the companies operating whole pools in the East Indies is said to make a practice of drilling in the wells and then shutting in those that have the highest gas ratios. That is, if some wells produce 5,000 cubic feet of gas per barrel while others produce only 1,000 cubic feet, the former wells are shut in or controlled so that the gas will work through parts of the sand that yield more oil for the same expenditure of natural energy.

Rainbow Bend a Unit Pool

TO illustrate from experience in this country, the Rainbow Bend pool may be cited. This pool was operated under one management and, as pointed out in the recent Federal Conservation Board report, many economies were applied but the records show that much still remains to be worked out in operating such a pool. In the main portion of the pool, were several wells in gassy areas that came in with both large oil and gas productions, and the gas-oil ratio rose from about 2,500 cubic feet to over 4,000 cubic feet and finally to 6,000 cubic feet per barrel. Meanwhile the average decline from the field dropped from the previously established rates of decline in inverse ratio to the increase in gas to oil. Later when the presure had been blown off and the gas-ratio started to decline again, the production started to approach what may be considered as the normal decline, but it seems clear that these few gassy wells must have seriousy lessened the total natural recovery of the pool.

In operating a property under artificial pressure, by-passing through the top part of the sand or through the more open parts is a source of some of the principal operating troubles, but the same wastes of energy are possible in a new field under natural pressure. This factor should be as carefully studied in natural recovery as in the use of artificial pressure, but it is obvious that successful efforts to control this trouble cannot be made in a pool divided into forty and eighty acre tracts.

New Facts Presented

HENRY L. DOHERTY has shown that besides the mechanical effect that gas has in the sand for forcing oil ahead of it into the hole, it also has a tremendous influence on the viscosity and capillarity of the oil, which must be overcome in expelling the oil from the pores of the sand. From this premise he argues that the gas should be kept dissolved in the oil. These are new facts to the industry, and how they can best be taken advantage of is not clear to writers. If the pressure is maintained on the oil, the gas cannot be used as an expellent and some other force must be applied. With use of back pressure and stop cooking the gas is used for both purposes, but it is found that in applying back pressure there is a certain differential pressure beyond which the gas rations increases instead of declines, thus suggesting that the loss in expelling force becomes greater than the gain in the reduction in viscosity and capillarity.

Experience in California has shown that under too high back pressure only gas will come from the well. Experimental evidence also indicates that the more soluble gas is mechanically a poor medium for forcing the oil ahead through the sand than the less soluble gas. But exactly how these observed facts relate to Mr. Doherty's findings must be determined by further investigation. To the writers it does not as yet seem clear how the effects on the physical characteristics of the oil can best be taken advantage of, but the presentation of these new facts indicates how little we know as yet of recovering oil and what unknown possibilities remain.

The whole subject of the utilization of natural forces is as yet but scantily known, yet it is clear to the writers that it is extricably involved with the question of whether the pools are to be developed and operated in units or in fragments. Under competition little can

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be done except allow the wells to produce to their greatest capacity, but our newer information leads us to believe that more can be gained by the methods of control discussed and that further research will show still greater improvements, all, however involving the neighbors as well as the operator himself.

Until unit operations are put into effect, this science can but ineffectively be applied and developed. There remains a whole field of engineering to be developed. The expansive force of the gas issued with each barrel of oil under average conditions is equal to ten horse power hours at average compressor efficiency, and the daily yield of gas in many fields has represented the energy of more than 50,000 horse power of compressor machinery, besides the reduction in the ease of flow of the oil through the sands. These tremendous forces should not be released hapahazardly.

Besides the better utilization of the gas in the pool for expelling oil, there is the value of the gas for the purposes of sale and gasoline making. The conditions in the competitive fields that prohibit the best use of the expansive force also limit the use of the gas for these other purposes. A high pressure field is developed too fast to permit the conservation of the gas, which is largely wasted before gasoline plants can be built or the gas taken into gas supply systems. With unit control and slower development, better control of the wells and of gassy parts of the pool, the gas would be produced from the beginning far more closely to the needs of the situation, resulting in the sale and processing of far more gas than at present. Until the portable gasoline plant was evolved, it is safe to say that often in a high pressure field not more than half the gas could be passed through the gasoline plants, and a still smaller portion would be utilized as fuel or sold. Such conditions also necessitated inefficient and duplicated plants and gathering systems, at the beginning, too small to treat but a fraction of the gas and soon after, too large for the gas available, thus necessitating high depletion charges against the cost of production.

Effect on Markets

THE effect on the oil market by unit operation is one that probably has received more attention from the industry than any other phase of the subject. The unexpected finding of a new high pressure pool and its subsequent rapid development and depletion is at the bottom of the instability of the oil markets. One or two such pools under the pressure of competitive development may readily upset the whole price structure. The addition of a few per cent in supply to a balanced market may cause a loss to the rest of the industry greater than the value of the oil produced from the new pools. Nor in the long run does the public benefit for losses must later be recouped by the producers, and the flood of oil causes wasteful practices in both consumption and production.

The impossibility of foreseeing the advent of such pools more than a few weeks ahead nullifies the efforts for providing against either surplus or famine and also discourages the development of policies which could be helpfully applied were the future oil supplies more dependable. This uncertainty has necessitated the huge reserves of stored oil, which adds materially to the final cost of the products to the consumer.

There can be no doubt that a better control of the flush fields would permit reductions in final costs of products to the consumer. Under a noncompetitive control the new fields could be so developed as to provide storage reserves in oil that could be used as a means of stabilizing the market. When needed the development of the pools could be hastened but when there was an oversupply production could be retarded. In pools under artificial pressure during periods of oversupply, the pressure could be built up while the production was curtailed, and when a shortage later arose there would be a vast store of energy in the sand that would make flush production to meet the situation. The writers believe this would work out to the benefit of the public just as much as to the industry.

So far discussion has been directed mostly towards showing the disadvantages of competitive operation. It is premature to say what final plan of operations will be followed in future, for so much remains to be found out as to the best method of operating a pool, which must largely come as a result of actual experience, but the writers are giving what they conceive will be the best practices under present knowledge.

Unit Operation Described

AS soon as a discovery well is drilled in, a few test wells should be drilled at strategic points to determine the magnitude of the pool and to ascertain the important natural features, from which to formulate a program of development. This would disclose the financial needs and the provisions that should be made for supplies, equipment, etc. as well as the main technical problems. These test wells should then be capped or produced under close control. If a small pool, drilling would be started from one center and the pool drilled up location by location. The distance between locations and their positions on the structure would be determined from this original data and checked as development progressed. If the pool were very large, it might be advisable to drill from several centers, but the effort would be to drill the wells at such intervals of time and at such distances as to meet both the financial needs and so as to avoid undue interfence between each well and the location in advance.

If gassy parts of the pool were found, they would be avoided, and if lean streaks were found, the spacing could be varied to suit the changed positions. The wells could be produced under such control as would give the lowest gas ratio and as would conform to the financial needs. Plans could be made early in the life of the field for gasoline plants and for the utilization or sale of surplus gas, for enough information would be obtainable early in the life of the pool to build with confidence that would take the gas as fast as it was developed. The gasoline plants would be designed to fit in later as compressor plants for forcing gas or air into the ground and for flowing wells. As soon as the wells ceased to flow satisfactorily under natural pressure, gas from the compressor plant supplemented, if necessary, by additional high pressure machinery would be piped to these wells, and when returned with the oil would be piped back to the plant.

Later on when the pressure of the first part of the field drilled had been depleted, the compressed gas would be forced into some of the wells both to increase recovery and to sustain the rock pressure so that the gas-lift could be continued in use. The gasoline plant would then become a combination gasoline plant and pressure plant for putting artificial pressure on the sands and for flowing the wells. Later on, when the sand had further depleted, it might be necessary to change the method of gas-lift and use either a stage or intermittent air-lift, but the writers believe that under proper control it would never be necessary to install a pump in any of the wells.

By such a method of development the field would pass without break from natural pressure to artificial pressure through a far better sustained production and without going through the agonizing period of low production and high costs, which fields go through now before rejuvenating processes are applied.

The financial gains from unit operation should be very great, especially in such a field as Cromwell, where through the combined savings in wells, equipment, and operating costs, and the increases in income from the additional oil, gas, and gasoline sold might readily increase profits from operations several times. The cumulative effects of many savings on one side and many increases in income on the other are surprisingly large. Thus in an assumed case of a pool of 1000 wells with a total development cost of $40,000,000 producing $80,000,000 worth of oil, gas, and gasoline at a total expense of $20,000,000, the profit would be $20,000,000, but if the development cost could be reduced a fourth to $30,000,000 and the gross income from the three products increased 50 per cent to $120,000,000 with no greater expense by reason of improvements in production methods, the profits would become $70,000,000, three and one-half times the other profits.

The public gain would be as great and the economies in development and production together with the increases in the recovery of oil, gasoline, and gas would result in lower cost of petroluem prod-

ucts to the consumer and longer lived and more dependable supplies.

Conclusions:

1. A pool of oil is a natural unit no matter how large, and operations cannot be conducted independently without increasing costs and reducing both recovery and profits.

2. Important savings in development and production costs can be made by reason of operating on a larger scale without the necessity of undue haste and with the opportunity for carefully working out a development program in advance.

3. Important savings can be made in the number of wells drilled, which can also be more effectively located to get the maximum production and to minimize the waste of gas and oil.

4. Unit development would also permit the use of improved production methods most of which rely upon the control of pressure in the sand, including back pressure, stop-cocking, gas or air-lifts, holding in of gassy wells.

5. Under unit development artificial pressure can be applied earlier, and possibly the wells can be flowed throughout the life of the field. Production can be sustained over a longer period and can be controlled more in accordance with the price of oil, which would minimize the disastrous fluctuations in oil prices.

6. Profits would be increased and, under conditions as at Cromwell, should be several times those realized under competitive operations.

7. Unit developement would be in the public interest, as it will increase and prolong supply, will create more capital, and reduce the final cost of products to the consumer.

Gas Lifts Improve Flow in Mid-Continent

By S. F. Shaw
Consulting Petroleum Engineer, San Antonio

Mr. Shaw prepared the accompanying papr for the fall meeting of the petroleum division, American Institute of Mining and Metallurgical Engineers, in session this week in Tulsa. The author is a mining engineer who gained wide recognition in the installation of air lifts to un-water a mine in Mexico, considered to be lost. Following this he began to apply the principles he had worked out for the handling of huge volumes of water to the production of oil and has within the past three years made a number of installations of his own design on properties in the Mid-Continent. Here he gives briefly some of the results obtained and principles involved.—Editor.

FOR some time it has been more or less recognized within the industry that a scientific control of flowing wells would result in increased production and a greater ultimate recovery of oil About two years ago it was proposed by the writer that this control should follow principles worked out by him while handling large air-lift operations. In the case of wells that had ceased to flow where a large quantity of liquid was present, the use of these principles would result in a large increase of production by using compressed air or gas to flow the well; in the case of a well flowing naturally it would take the form of controlling the gas associated with the oil, resulting either in immediate increase of production or in a reduction of the gas consumed per barrel of oil, and in both cases would result in a greater ultimate recovery from the sand.

The Roxana Petroleum Corp. appreciating the advantages to be obtained by a scientific application of the principles of the air lift to oil wells, recently engaged, for a limited time, the services of the writer to work out some of the problems involved. The work was carried out at Braman, Garber and Tonkawa in Oklahoma, and at Oxford in Kansas. Following some suggestions of the writer, a well was also equipped by the Roxana company at Smackover by A. S. Field.

The results of the use of this method as a whole were quite satisfactory, so far as it was possible to carry out these ideas in a limited time. A total of fourteen wells produced 6590 barrels before installation of the air lift and 13,847 barrels afterwards, thus giving an increase of 110 per cent. The range of increase was from 5 per cent to about 400 per cent where conditions were favorable for the use of the air lift, indicating that in many cases wells would yield a greater production of oil if the fluid were removed as rapidly as it enters the well. Most of this increase was made on wells already provided with the usual type of gas lift.

In bringing about this change in operating conditions it was arranged to remove all back pressures wherever possible. All pockets where air or gas could accumulate, and all horizontal flows, were eliminated in the flow line, the gas trap being moved close to the well and placed at such an elevation that a gravity line would carry the liquid from the trap to the receiving tank. The flow column, or educator, is of such design at the lower end as will reduce to a minimum the slippage loss that usually takes place in the lower section of the educator pipe, and in the upper section is so designed as to reduce the friction loss in that part to an acceptable minimum. Finally, and not the least important, the wells are operated at the rate that gives the highest acceptable efficiency for the particular set of conditions involved. The calculations are too complicated to attempt to explain in a short paper.

Gas-Oil Factor Noted

ORIFICE meters were placed on both the gas input line and the gas discharge line of some of the wells in order to determine the quantities of gas consumed per barrel of oil during the operation. The readings on the input meter chart are fairly satisfactory, but in some cases where the discharge is fluctuating to any extent, the oscillations of the differential pressure needle are rather severe and the readings are not as accurate as could have been desired and made for some apparent discrepancies. However, the general tendencies afford some valuable information on control of the gas accompanying the oil as will be noted in Table No. 1 which gives data on two of these wells:

Table No. 1

Well	Period	Bbl. Oil per Day	Lbs. Gage Pressure	Cu. ft. Gas per Bbl. Oil From Compressors	From Sand	Total	At 100% Efficiency	Per Cent Efficiency
1	5/19–5/28	1433	250	251	939	1200	154.67	12.9
1	5/29–5/7	1619	250	345	853	1198	160.14	13.4
1	6/8 –6/17	2128	250	216	699	915	156 95	17.2
1	6/18–6/24	2497	250	222	667	889	160 14	18.0
2	7/1 –7/10	404	250	606	438	1044	149.48	14.3
2	7/11–7/17	829	250	745	663	1408	160 40	12.8
2	7/18–7/24	1891	250	520	473	993	184.63	18.6
2	7/25–7/30	1994	250	445	377	822	176.44	21.4

It will be noted that at Well 1 there was, in general, a decrease in consumption of gas per barrel of oil lifted as the quantity lifted more nearly approached the efficient capacity of the educator. The gas accompanying the oil from the sand showed a gradual decrease per barrel of oil, dropping from 939 cu. ft. per bbl. to 667 cu. ft. per bbl. and in well 2, the quantity of gas was reduced to 377 cu. ft. per bbl. These quantities of 667 cu. ft. and 377 cu. ft. can be still further reduced by closer design to meet the exact conditions. In a paper read

before the Federal Oil Conservation Board on February 10 and 11, 1926, James O. Lewis estimated that the quantity of gas accompanying a barrel of oil taken as an average in all classes of wells is about 1500 cu. ft. G. C. Smith (director, U. S. Geological Survey) states that at Dominguez Hill the input gas under 260 lbs. pressure averages about 1100 cu. ft. per bbl. of oil, which with the 1200 cu. ft. acompanying the oil makes a total of 2300 cu. ft. required to lift a barrel of oil to the surface, and this is compared with the natural ratio of 2850 cu. ft. per bbl. for that field.

The gas-oil ratios afford a good basis for comparison when conditions of submergence, lift and quantity of fluid are identical; when any of these conditions are varied the efficiency factor should be employed. The efficiency factor is based on the foot pounds of work performed in lifting a barrel of liquid to the surface compared with the foot pounds of energy stored in the gas under the pressure obtaining at the lower end of the tubing. In Table No. 1 it will be noted that as the efficiency factor is increased, the quantity of gas taken from It will be noted in Table No. 1 that the sand per barrel of oil is decreased. quantity of gas from the sand in Well 2 was considerably less than in Well 1. I suppose that the character of the sand, porosity, etc., makes for this difference. The quantity of gas that is lacking in the oil to raise the oil to the surface must, of course, be made up by the compressors, and it is desirable to confine the gas coming from the sand to that dissolved in the oil raised, so far as it is possible to do so, making up the deficiency by the compressors.

It is generally supposed that back pressures in a new well result in a lower consumption of gas per barrel of oil when no attempt at control is made, and in an address before the American Institute of Mining Engineers in 1925, T. E. Swigart has given some valuable data on the use of back pressures in the Dominguez Hill field, California. Let us compare the two wells A and G, noted by Mr. Swigart which were flowing through a bean under conditions of pressure and lift approximating those for wells 1 and 2 in the Mid-Continent field. The figures for these two wells are given in Table No. 2.

Table No. 2

Well	Bbl. Oil per Day	Lbs. Gage Pressure	Cu. ft. Gas per Bbl. Consumed	Cu. ft. Gas per Bbl. Required at 100%	%Efficiency Obtained	Quantity of Gas Required to Lift 1 Bbl. Oil at Acceptable Efficiency
A	392	250	1775	143.2	8.1	759
G	741	225	2290	148.2	6.0	823

The gas-oil ratios in Table No. 2 are about as satisfactory as can be obtained when employing back pressure at gage pressures of 225 lbs. and 250 lbs. The quantity of gas dissolved in a barrel of oil under these conditions of pressure is about 44 and 39 cu. ft. respectively, consequently there must be abstracted from oil not lifted 1731 cu. ft. of gas for each barrel of oil lifted in Well A, and 2251 cu. ft. in Well G. A comparison of these figures with those obtained in Wells 1 and 2, in the Mid-Continent, and with the work now being done at Dominguez Hill as noted by G. O. Smith is found in Table No. 3.

The proper time to begin application of control over the gas would appear to be at the time the well is first brought in, and this control should be continued until the pressure has declined to a point too low for the gas lift to operate with any acceptable degree of efficiency. The first stages of flowing do not require the introduction of compressed gas since there is usually considerably more gas dissolved in a barrel of oil than is necessary to raise a barrel to the surface. After pressure and volume of gas have declined to a point where too much gas is being drawn from distant parts of the sand, a compressor plant should be placed in service to make up the deficiency.

Acknowledgement is due to the Roxana Petroleum Corp. whose progressive policy has enabled this work to be done, and to Mr. Reid W. Bond petroleum engineer assigned by the Roxana Petroleum Corp. to this work, whose tact and good judgment contributed much toward carrying out the tests to a successful conclusion.

Table No. 3

Cu. ft. Gas per Barrel of Oil

Well	In Put	From Sand	Total	Dissolved in the Oil	Abstracted From Oil Not Lifted	Saving Over Natural Ratio of 2850 cu. Ft. per Bbl. Oil	Bbl. Oil that can be Moved to the Well by the Gas Saved
A	....	1775	1775	44	1731	1075	0.6
G	....	2290	2290	39	2251	560	0.25
(G. O. Smith)	1100	1200	2300	44	1156	1650	1.38
1	222	667	889	44	623	2183	3.27
2	445	377	822	44	333	2473	7.42

Allee Made President

PRESIDENT HOTEL

KANSAS CITY, Sept. 28

George S. Allee of Kansas City, who since its organization four years ago has been secretary of the Missouri Oil Men's Association, today was both honored and rewarded for his work with the organization, for he was elected president and given a substantial increase in salary. Mr. Allee succeeds the late H. G. James.

The roster of new officers, their firms and residences follow:

President—George S. Allee, Kansas City.

Vice Presidents—C. L. Ackert, Pierce Petroleum Corp., St. Louis; Wash Adams, Purity Oil Co., Springfield; John G. Gibson, Capital City Oil Co., Jefferson City, and Wallace Smith, Red Eagle Oil Co., Macon.

Treasurer—C. W. Elstun, Benzo-Gas Motor Oil Co., Kansas City.

Directors—E. L. Martin, Manhattan Oil Co., Kansas City; W. R. McCain, Purity Oil Co., Springfield; Arthur Land, Land Petroleum Co., Warrensburg; C. B. Hood, Joplin Oil Co., Joplin; Paul McMahan, Independent Oil Co., Seymour; Bert Bertram, Bertram Naphtha Co., Kansas City; Harry Mutz, Independent Oil Co., Maryville; George Koertel, Liberty Bell Oil Co., St. Louis; Dave Cohen, Puritan Oil Co., St. Louis; Walter Ware, Lubrite Sales Corp., St. Louis; H. E. Miller, H. E. Miller Co., Festus; W. F. Atkins, Skelly Oil Co., Kansas City, and Rupert Cox, Central Oil Co., St. Joseph.

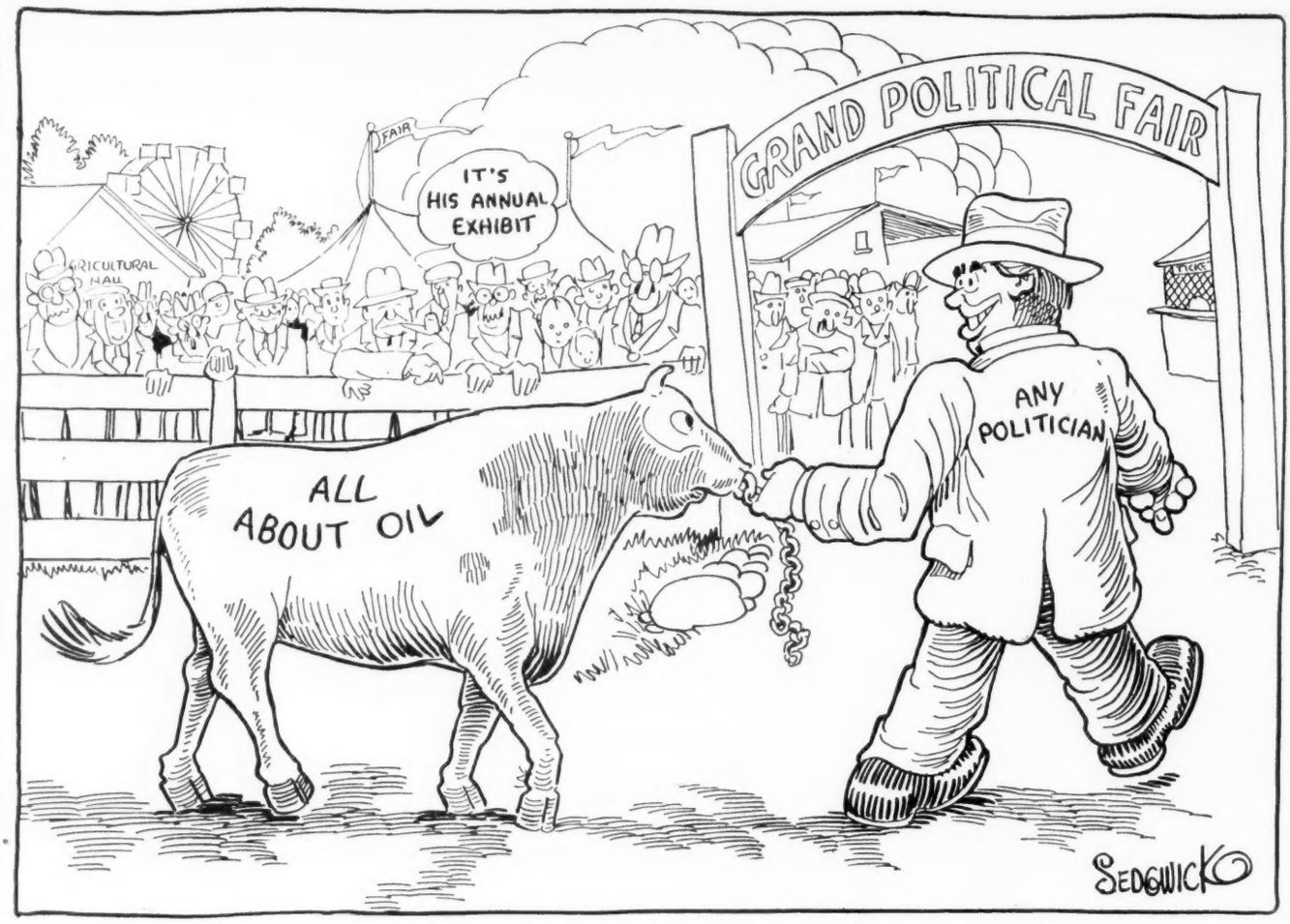
George S. Allee

Some of the newly elected officers and directors of the Missouri Oil Men's Association are:

Bert Bertram, Kansas City, director; C. W. Elstun, Kansas City, treasurer; Paul McMahan, Seymour, director; George S. Allee, Kansas City, president; George Koertel, St. Louis, director; C. L. Ackert, St. Louis, vice president; H. E. Miller, Festus, director, and W. R. McCain, Springfield, director.

George S. Allee of Kansas City has been secretary of the Missouri Oil Men's Association since its organization four years ago. At a meeting of the members last week at Kansas City, Mr. Allee was elected president, given an increase in salary, and was authorized to employ a secretary who also will handle the secretarial duties of the association.

Erie
Franklin
Allegheny R.
Coudersport
Wellsboro
Susquehanna R.
Montrose
Scranton
Clearfield
Williamsport
PENNSYLVANIA
Pittsburgh
Waynesburg
HARRISBURG
Reading
Gettysburg
Philadelphia
Delaware R.
THE best crude that Pennsylvania fields produce is the basis of the Hartol Products coming from our Franklin (Pa.) Refinery.
Wherever you are — whatever your requirements—we can supply you:—by rail or water, in trainloads, shiploads, tank cars, barrels or drums.
Let us quote prices. Test our quality and delivery by an order. Let your customer be the judge.
NEUTRAL OILS
180—No. 3 color
200—No. 3 color
34—Non Viscous
CYLINDER STOCK
600 Flash High Viscous
GASOLINE
High Test 68/70 and 72 Grav.
Also Motor Gasoline
BURNING OIL
45 W W Kerosene
FUEL OIL
30/40 Straw
WAX
122/124 Crude Scale
HARTOL
PRODUCTS CORPORATION
NEWARK N.J.



AND NOW THE FAIR OF FAIRS

Would Reject Rate Plea Of White Star

By Special Correspondent

WASHINGTON, Oct. 8.—Dismissal of the petition of the White Star Refining Co., for a lower basis of freight rates on crude and natural gasoline from points in Oklahoma to its refinery at Hartford, Ill.; in the Wood River district, and on refined products from that point to destinations in Michigan, Ohio, Indiana and Canada has been recommended to the Interstate Commerce Commission by Martin J. Walsh, who took the testimony in that case.

The White Star, in its petition, sought to bring about an adjustment that would enable it to get into the destination territory mentioned on terms of freight rate equality with refiners at Lima and Toledo, Ohio. The latter have an advantage of 5 cents per 100 pounds. The Mid-Continent refiners, the examiner said, had a like advantage.

The refiners at the Ohio points have what is known as a transit privilege. That is, they bring in natural gasoline or crude and send out refined products, at a rate, from point of origin of the crude to the final destination of the refined product, something less than the combination of the local rates to and from the refining points. The White Star asked for something of that kind at Hartford.

Walsh said the privilege should not be granted because the Illinois Terminal, the only road serving the White Star, did not give transit to anybody on its line and had no control over the transit at Lima, Toledo and Findlay. That being so, he said, it could not truthfully be said the road serving the White Star discriminated against it. He added that the regulating body never required the establishment of transit de novo, except to remove discrimination.

The following table, taken from the record, shows the rates on natural gasoline from Oklahoma points to points in central territory refined at Wood River as compared with rates on the same commodity refined at Toledo, Lima and Findlay.

To	Via Wood River	Via Toledo, Lima, Findlay
Akron, Ohio		
a	29.5	27.5
b	31.5	28.5
c	61	56
Canton, Ohio		
a	29.5	27.5
b	31.5	28.5
c	61	56
Columbus, Ohio		
a	29.5	27.5
b	29.5	26.5
c	59	54
Bay City, Mich.		
a	29.5	27.5
b	32	29
c	61.5	56.5
Detroit, Mich.		
a	29.5	27.5
b	31.5	28.5
c	61	56
Jackson, Mich.		
a	29.5	27.5
b	30	27
c	59.5	54.5

a. Rate to Missippi River. b. Rate beyond Mississippi River. c. Through Rate.

The Roxana, Sinclair and Sun Oil companies and the Barber Asphalt Co. intervened in the case against the White Star but the examiner said they did not say why. The White Star claimed that it could not compete with refiners in the Mid-Continent field nor with those in Ohio.

The railroads, in answer to that testified that the complainant's output of refined oil had increased 500 per cent since 1921 and that in the first five months of 1926 the increase was at the rate of 100 per cent.

The Editor's Viewpoint

National Petroleum News

Wide Fluctuations Seem Unjustified

THE history of gasoline consumption shows the stable character of it. It is unfortunate that the oil industry has not been able to adapt itself to that stability.

When one notices the steady growth in gasoline gallonage in each year for the last seven years and compares that growth with the wild fluctuations in weekly and monthly shipments of gasoline, one then can understand how the oil industry is probably giving more thought to the day to day price and the day to day shipments than it should. If the industry would keep its eyes steadily on the long trend, it could see more clearly and more optimistically the opportunity for profit.

The following table shows the shipments from all refineries in the United States of gasoline by years.

Year	Gasoline shipments from all U. S. Refineries (Gallons)
1918	3,685,243,000
1919	3,808,391,000
1920	4,866,958,000
1921	5,029,844,000
1922	5,904,529,000
1923	7,338,503,000
1924	8,841,767,000
1925	10,565,019,000
6 Mo. 1926	5,736,453,000

Compare that steady growth with the wild fluctuations in shipments from the 124 Mid-Continent refineries reporting each week to NATIONAL PETROLEUM NEWS.

SHIPMENTS OF GASOLINE FROM 124 MID-CONTINENT REFINERIES

Week Ending		Percentage Increase or Decrease of 1926 over 1925
March	5	7 Increase
"	12	49 "
"	19	8 "
"	26	25 "
April	2	15 "
"	9	3 "
"	16	5 "
"	23	1 "
"	30	29 "
May	7	23 "
"	14	14 "
"	21	5 "
"	28	8 "
June	4	4 "
"	11	12 Decrease
"	18	2 "
"	25	4 Increase
July	2	22 "
"	9	1 Decrease
"	16	12 Increase
"	23	8 "
"	30	19 "
August	6	6 "

In that period the price of gasoline went from 10 cents to 11¾—dropped to 11 and the next week it went up to 12—then it dropped down below 11—came up to 11½ and then dropped back below 11 again.

While a fluctuating price is necessary to keep output in balance ,nevertheless one can't help but wonder if such fluctuations are warranted by the year's situation if the industry could keep its eye and its mind more on the year and less on the week to week history.

The week to week history is necessary to check one's plans against a whole year. It is necessary for proper plant operation, but if the industry had a more optimistic view of the whole situation, couldn't the shipments be leveled out more and the industry's mind kept on the year's increase of 13 to 15 per cent to the betterment of the price?

If everyone will figure the year's demand against his budget he would figure that unless he wants to give undue battle, he would not increase his output in greater percentage than the total per cent increase in the demand. When the year promises 15 per cent increase of gasoline and a company goes out to get 25 per cent increase, it means that it is going to take some business away from someone else and when it does that person is going to suffer and probably fight.

But if each company, refiner and marketer, kept the 15 per cent increase in markets continually alongside his own gallonage and held to it, conditions would be more stable, and the industry would be more optimistic and undoubtedly gasoline prices would be higher, a thing much to be desired.

—W. C. P.

Climbed On Self-Contained Power

WE, who are in the oil industry, are probably too close to it to realize the great opportunities for a man's advancement in it and that the laurels of high positions are awarded for sheer merit.

We cannot let pass without special comment a recent change in a high executive position of the Standard Oil Co. of Indiana, which is indicative of what is true in every oil company, big and little.

T. J. Thompson, when he retired as general salesmanager, the other day left the top of the ladder of success, up which he had been steadily climbing for almost a half-century. The bottom of this ladder, if our memory is correct, was literally in a ditch, at the bulk station of the Standard in Grand Rapids. There Mr. Thompson first got employment. His daily task was to swing a pick.

His ascent in the organization was by hard, intelligent work. The mysterious "Wall Street" influence which we hear of occasionally as pushing favorites ahead, was not his. He had no "high-up, influential" relatives. He married no money-bags. He rose by the constant exercise of that energy with which he swung the pick.

There have been many "Mr. Thompsons" in the oil industry and there are many of them today, but if we did not stop to point out this "Mr. Thompson" we might not take the time to appreciate the pride and feel the inspiration that such men's lives hold for us.—W.C.P.

Future of Bus Transportation Bright

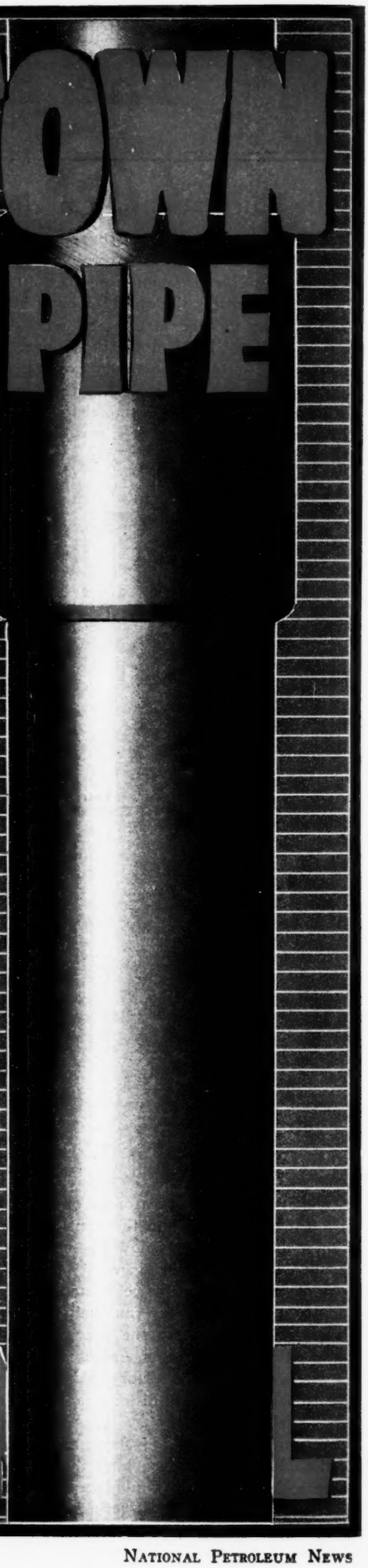
THE rapid growth of the motor bus as a factor in American transportation is obvious to everybody. However, the extent to which the electric railway companies, reading the signs of the times, are taking on the operation of buses in the cities where their rail lines operate may be more or less surprising.

Seeing themselves in some cases in the last few years driven out of business and their investments in rolling stock, rights of way, tracks and wires depreciated heavily, the railway men are seizing on the bus and making it their own as a complement and auxiliary to their lines, instead of allowing it to become a deadly competitor.

The extent to which this policy is being carried out was emphasized at the annual convention of the American Electric Railway Association which has just closed in Cleveland.

Gasoline more and more is displacing electric power in transporting city dwellers.—P. T.

YOUNGSTOWN SEAMLESS PIPE



Made on the newest and most modern seamless tube mills in America by a concern having entire control of its raw materials and all processes connected therewith, "Youngstown" Seamless Tubing and Casing will be found worthy of the confidence shown by the trade in the past in Oil Country Goods manufactured by the Youngstown Sheet & Tube Company.

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CONTINENTAL

Bureau of Mines Statistics Show Oil Situation to Be Strong

By Roger B. Stafford
N. P. N. Staff Writer

CLEVELAND, Oct. 9. BUREAU OF MINES petroleum statistics for August reveal these salient facts:

1. Draft of 6,362,000 barrels on above ground stocks of oils, crude and refined.

2. Gasoline production and consumption volumes the largest ever attained.

3. Decrease of 2,764,000 barrels in gasoline stocks to 34,551,000 barrels, the smallest volume of gasoline stocks since Dec. 31, 1924.

4. Gasoline stocks on Aug. 31 were lower than stocks on Aug. 31, 1925. This is the first time since 1920 that stocks at any month end have been lower than stocks at the end of the same month in the preceding year.

5. Kerosene stocks decreased for the first time this year.

6. Kerosene exports were the largest since December, 1924.

7. Lubricating oil stocks continued to fall, with domestic demand the largest in the history of the country.

8. Gas and fuel oil stocks east of California reached the highest point for the year on Aug. 31 but were more than 3,000,000 barrels lower than on Aug. 3, 1925.

9. Wax stocks rose to the highest point of the year when exports and domestic demand slackened.

10. Crude oil stocks for the entire United States declined 3,147,000 barrels, of which decline 1,736,000 barrels was east of California and 1,451,000 barrels in California.

11. Crude oil production at 2,145,968 barrels daily average was the largest in the United States since September, 1925.

12. Charges of all oils to refiners' stills set a high record.

Crude Demand at Peak

IN August domestic demand for crude and refined oils reached the unprecedented volume of 68,800,000 barrels. Exports for all refined products totaled almost 2,000,000 barrels more than July exports but crude exports were a third lower than July exports. Total daily average demand for crude and refined oils was 2,599,000 barrels and the new supply was only 2,394,000 barrels. This deficiency in new supply caused a withdrawal of 205,000 barrels of oil daily from storage. In July the deficiency amounted to only 123,000 barrels a day and in August, 1925, to only 13,000 barrels a day.

The withdrawal of refined goods amounted to 3,175,000 barrels and on Aug. 31 stocks of all refined products including wax, coke and asphalt, were 6,146,000 barrels less than on Aug. 31, 1925.

Panhandle and Spindletop accounted for the gain in crude production frem 2,093,322 barrels daily average in July to 2,145,968 barrels daily average in August. The August average was 11,600 barrels less than the average in August, 1925. The bureau's report shows a 40,000-barrel advance in Gulf Coastal Texas production. The cause was Spindletop. Production in the rest of Texas advanced from 340,097 barrels daily average in July to 367,871 barrels daily average in August. The cause was Panhandle.

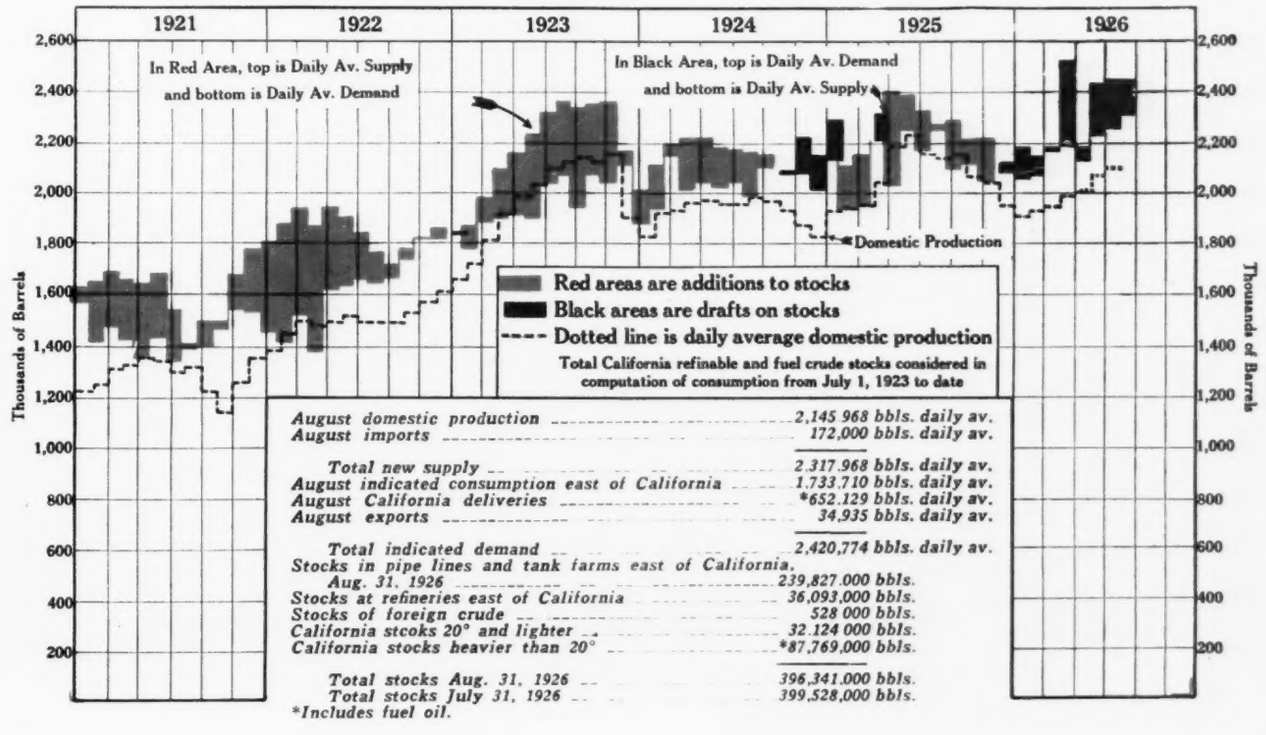
Increased production in Oklahoma amounted to less than 2000 barrels daily average. There was a slight gain in California. A gain of 1250 barrels in the daily average production of Salt Creek was offset by a fall of more than 3000 barrels in the rest of Wyoming. Daily average production in Arkansas fell more than 5000 barrels.

Crude Stocks Larger at Gulf

REFINERS' stocks of crude oil were increased 58,000 barrels during August because Gulf Coastal refiners increased their supply of the raw material. Refiners in other disctricts east of California, excepting north Louisiana-Arkansas reduced their crude stocks. The Gulf Coastal region was the only one to show an increase in pipe line and tank farm stocks of crude.

Total crude stocks in the United States were 27,023,000 barrels less on Aug. 31 than on Aug. 31, 1925. Stocks east of California have declined steadily for 15

Barometer of the Crude Oil Situation


1921
1922
1923
1924
1925
1926
In Red Area, top is Daily Av. Supply and bottom is Daily Av. Demand
In Black Area, top is Daily Av. Demand and bottom is Daily Av. Supply
Domestic Production
Red areas are additions to stocks
Black areas are drafts on stocks
Dotted line is daily average domestic production
Total California refinable and fuel crude stocks considered in computation of consumption from July 1, 1923 to date
Thousands of Barrels
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
August domestic production 2,145 968 bbls. daily av.
August imports 172,000 bbls. daily av.
Total new supply 2.317.968 bbls. daily av.
August indicated consumption east of California 1.733.710 bbls. daily av.
August California deliveries *652.129 bbls. daily av.
August exports 34,935 bbls. daily av.
Total indicated demand 2,420,774 bbls. daily av.
Stocks in pipe lines and tank farms east of California, Aug. 31, 1926 239,827.000 bbls.
Stocks at refineries east of California 36,093,000 bbls.
Stocks of foreign crude 528 000 bbls.
California stcoks 20° and lighter 32.124 000 bbls.
California stocks heavier than 20° *87,769,000 bbls.
Total stocks Aug. 31, 1926 396,341.000 bbls.
Total stocks July 31, 1926 399,528,000 bbls.
*Includes fuel oil.

months and in California for three months. Stocks in the United States as a whole have declined for nine consecutive months. The following table shows the condition of crude oil stocks during 1925 and 1926:

(Thousands of Barrels)

1925	*East of Calif.	†In Calif.	Total U.S.
January	319,338	100,026	419,364
February	318,582	101,729	420,311
March	316,915	103,721	420,636
April	317,051	106,605	423,656
May	319,994	110,081	430,075
June	318,672	112,395	431,067
July	316,139	115,799	431,938
August	311,129	120,073	431,202
September	308,925	124,483	433,408
October	305,892	127,450	433,342
November	304,534	128,934	433,468
December	299,367	129,434	428,801
1926			
January	291,400	130,841	422,241
February	287,975	131,638	419,613
March	287,710	131,678	419,388
April	286,208	124,290	410,498
May	284,009	125,359	409,368
June	281,432	122,794	404,533
July	278,184	121,344	399,528
August	276,448	119,893	396,341

*For 1925, but not for 1926, producers' stocks included on Dec. 31 these amounted to 7,560,000 bbls. †Includes heavy fuels.

Deliveries by pipe lines of domestic crude for both domestic and export use in the first eight months of 1926 totaled 525,125,000 barrels compared with 492,719,000 barrels in the first eight months of 1925. Exports of crude were a little larger this year than last but imports were down more than 2,000,000 barrels for the eight months. The total new supply of crude oil available to the United States was 532,760,000 barrels in the eight months, or 21,533,000 barrels less than in the corresponding time last year.

Daily average production of gasoline in August was 819,871 barrels compared with 804,097 barrels in July. Domestic shipments of gasoline averaged 847,807 barrels, or approximately 34,962,000 gallons a day, compared with 779,419 barrels a day in July. Total domestic demand in August was 1.68 per cent larger than in August, 1925. Production of gasoline was increased only 9.55 per cent. over the preceding August.

Exports of gasoline were down a little to the smallest volume in the last five months but still larger than exports in January, February and March. Imports of gasoline, totaling 674,000 barrels, were the largest on record.

Small Gain in Output

PRODUCTION of gasoline at American refineries was 1.96 per cent larger in August than in July. Total shipments, domestic and export were 6.47 per cent larger. Production was curtailed at Atlantic seaboard plants and in the indiana-Illinois district. Elsewhere, except at the plants in Gulf Coastal Louisiana, production was larger than in July. Shipments were lower in the Indiana-Illinois, and Oklahoma-Kansas districts in August than in July, but every district reduced gasoline stocks in August.

Of the total gasoline output of 25,416,000 barrels, 62 per cent was straight run, 32 per cent cracked and 6 per cent natural gasoline. These percentages were a decline of one point in straight run from July and an increase of one point

Crude Production

(Amounts in Barrels)

States	Aug. 1926	July 1926	Aug. 1925
Arkansas	158,903	164,548	245,000
California	605,325	604,619	677,599
Colorado	8,742	9,548	3,032
Illinois	21,613	21,968	20,807
Indiana	2,161	2,225	2,129
Kansas	118,452	120,484	115,871
Kentucky	17,439	17,748	17,968
La. Gulf Coast	12,484	12,645	8,322
Rest of State	53,387	54,710	47,097
Michigan	226	161	.....
Montana	25,032	29,000	12,936
New Mexico	4,484	4,291	3,871
New York	5,355	5,613	4,710
Ohio, cent.-east	15,032	15,000	14,290
Northwest	5,290	5,549	5,387
Oklahoma	477,482	475,768	479,852
Pennsylvania	25,290	25,290	21,742
Tennessee	77	90	64
Tex., Gulf Coast	141,484	101,742	80,742
Rest of State	367,871	340,097	298,484
West Virginia	16,355	16,807	15,387
Wyo., Salt Creek	45,161	43,903	60,645
Rest of State	18,323	21,516	21,710
Total U. S.	2,145,968	2,093,322	2,157,645
Classification by Gravity			
24°A.P.I.and lighter	1,747,065	1,712,000	1,477,387
Heavier than 24°.	398,903	381,322	680,258

Petroleum Supply and Demand

(Barrels of 42 U. S. Gallons)

	August 1926	July 1926	June 1926	August 1925
Total stocks end of preceding month	523,049,000	526,859,000	530,581,000	550,288,000
Domestic Crude Production:				
Light	54,159,000	53,072,000	51,065,000	52,198,000
Heavy	12,366,000	11,821,000	10,677,000	15,382,000
Imports of Crude oil	5,332,000	5,185,000	5,571,000	4,045,000
Imports of Refined oils	2,360,000	1,992,000	2,344,000	1,292,000
Total supply all oils	597,266,000	598,929,000	600,238,000	623,205,000
Exports of Crude	1,083,000	1,726,000	1,225,000	1,465,000
Exports of Refined	10,696,000	8,738,000	9,399,000	8,428,000
Domestic demand, crude and refined	68,800,000	65,416,000	62,755,000	63,433,000
Total demand	80,579,000	75,880,000	73,379,000	73,326,000
Total stocks end of month	516,687,000	523,049,000	526,859,000	549,879,000
Decrease in Stocks	6,362,000	3,810,000	3,722,000	409,000
Daily Average New Supply	2,394,000	2,325,000	2,322,000	2,352,000
Daily Average Demand	2,599,000	2,448,000	2,461,000	2,365,000
Daily Average Deficiency	205,000	123,000	139,000	13,000
Crude Stocks—				
East of California: Light	219,406,000	221,013,000	222,092,000	303,291,000
Heavy	57,042,000	57,171,000	59,340,000	
In California: Light	32,124,000	33,583,000	35,405,000	41,566,000
Heavy	87,769,000	87,761,000	87,389,000	78,507,000
Total Stocks of Crude	396,341,000	399,528,000	404,226,000	423,364,000
Total Stocks of Refined	120,346,000	123,521,000	119,629,000	126,515,000

Gasoline Demand and Supply

(Barrels of 42 U. S. Gallons)

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1925	20,043,000	344,000	2,255,000	14,386,000	34,569,000
February	19,182,000	287,000	2,456,000	13,210,000	38,372,000
March	20,631,000	346,000	2,947,000	14,890,000	41,512,000
April	20,752,000	244,000	2,600,000	19,013,000	40,895,000
May	21,996,000	404,000	2,362,000	20,459,000	40,474,000
June	22,488,000	384,000	2,706,000	20,724,000	39,916,000
July	23,073,000	401,000	2,504,000	22,879,000	38,007,000
August	23,191,000	314,000	2,953,000	22,323,000	36,236,000
September	21,573,000	182,000	2,242,000	20,177,000	35,572,000
October	22,488,000	214,000	2,538,000	19,826,000	35,910,000
November	21,946,000	373,000	2,842,000	18,024,000	37,363,000
December	22,238,000	320,000	3,092,000	17,954,000	38,875,000
Total 1925	259,601,000	3,813,000	31,497,000	223,865,000	.....
January, 1926	22,593,000	384,000	3,421,000	16,788,000	41,643,000
February	20,560,000	408,000	3,245,000	15,112,000	44,254,000
March	23,084,000	517,000	3,186,000	18,556,000	46,103,000
April	23,515,000	454,000	4,402,000	19,796,000	45,874,000
May	24,509,000	621,000	4,529,000	23,568,000	42,907,000
June	24,238,000	464,000	3,744,000	23,073,000	40,792,000
July	24,927,000	460,000	3,702,000	24,162,000	38,315,000
August	25,416,000	674,000	3,572,000	26,282,000	34,551,000
Jan.-Aug. 1926	188,842,000	3,982,000	29,801,000	167,347,000	.....

Stocks of Crude Oil

(Domestic unless otherwise specified. Amounts in Thousands of Barrels.)

AT REFINERIES

Districts	Aug. 31	*July 31	†Aug. 31
East Coast:			
Domestic	8,038	8,258	7,122
Foreign	2,905	3,092	2,370
Appalachian	1,659	1,722	1,302
Indiana, Illinois, etc	1,844	1,881	1,148
Oklahoma-Kansas	2,889	3,081	4,696
Texas Gulf Coast:			
Domestic	7,029	6,627	5,153
Foreign	371	416	530
Texas, rest of state	1,010	1,133	1,131
Louisiana Gulf Coast:			
Domestic	7,060	6,664	3,834
Foreign	1,111	1,089	1,404
Louisiana-Arkansas	715	572	574
Rocky Mountain	1,462	1,500	1,451
U. S. east of Calif.	36,093	36,035	30,715

AT TANK FARMS IN PIPE LINES AND ELSEWHERE THAN REFINERIES

Appalachian	6,962	6,984	6,854
Kentucky	1,481	1,667	1,868
Lima-Indiana	731	771	1,097
Illinois-S. W. Indiana	11,451	11,731	10,954
Okla.-Kans.-Texas except Gulf Coast	134,472	135,295	161,629
N. Louisiana-Arkansas	37,129	38,831	40,159
Gulf Coast	17,300	16,006	20,657
Rocky Mountain	30,301	30,495	28,548
Foreign:			
Atlantic ports	75	70	197
Gulf ports	453	299	613
Total east of Calif.	276,448	278,184	303,291
California:			
20° and lighter	32,124	33,583	41,566
Heavier than 20°	87,769	87,761	78,507
Grand Total	396,341	399,528	423,364

CLASSIFICATION BY GRAVITY
(Crude elsewhere than refineries east of Calif.

24° and lighter	219,406	221,013	.....
Heavier than 24°	57,042	57,171	.....

*Revised. †Final figures.

Troy Hunn,
Halliburton Engineer in
charge of the job.
Marland Oil Co.
of Oklahoma's B. O.
Stephenson No. 1, where
the job was done.
1200 Sacks of Cement,
to be mixed and placed
in double quick time.
1200
Sacks of Cement
4240 Feet of 8¼-in. 32-lb. Casing
CEMENTING TIME:
1 Hour, 28 Minutes
Fifty-eight minutes after the pumps were started on this job they were shut down. Thirty minutes more were consumed in making the change and landing plug. Total Time: 1 hour, 28 minutes.
Since speed is the essence of safety in scientific oil well cementing, this instance [a typical one] is simply another indication of why the Halliburton method is the fastest, safest and most widely used in the world.
HALLIBURTON
OIL WELL CEMENTING CO.
Duncan, Oklahoma

in cracked gasoline. The proportion of natural gasoline used was unchanged.

The daily average production of natural gasoline in August was 85,910 barrels, compared with 84,761 barrels in July. Stocks of natural gasoline on Aug. 31 were almost 39,000 barrels lower than on July 31. Production of natural gasoline-naphtha blends was larger in August and stocks at the end of the month were 12,000 barrels larger than at the end of July.

Production of all motor fuels including benzol blends amounted to 26,473,808 barrels, compared with 26,088,808 barels in July. The volume of benzol used was unchanged at approximately 178,570 barrels.

Kersoene output was increased less than 300,000 barrels in August. Domestic demand increased only 24,000 barrels but exports increased more than 1,000,000 barrels to a record of 2,639,000 barrels. Stocks were lowered 235,000 barrels. Kerosene production was more in August than in July in all districts excepting Texas and California. Texas and the Louisiana-Arkansas districts were the oly ones to increase stocks.

Fuel Oil Stocks Increase

FUEL oil stocks east of California rose 804,000 barrels to 26,500,000 barrels, the largest stocks at any month end this year but stocks were lower than a year before. Production of gas and fuel oils was curtailed. There was a small gain in imports and an increase of 1,500,000 barrels in exports. Domestic consumption figures are not available.

Output of lubricants was slightly lower than in July. Imports were negligible. Exports decreased 80,000 barrels but domestic demand, the largest on record, carried stocks to the lowest point this year. At 7,226,000 barrels, lube stocks were only 700,000 barrels more than on Aug. 31, 1925.

There was a small increase in wax production but a fall in both foreign and domestic demand caused again of 8,000,000 pounds in stocks during the month.

(Cont'd on page 75)

Kerosene, Lube, Wax, Gas and Fuel Oils

KEROSENE (Bbls.)	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1926	5,113,000	.....	1,871,000	3,515,000	6,843,000
February	4,714,000	1,000	1,577,000	3,129,000	6,857,000
March	5,485,000	1,000	1,785,000	3,560,000	6,998,000
April	5,012,000	1,000	1,642,000	3,355,000	7,014,000
May	5,193,000	4,000	1,623,000	3,211,000	7,378,000
June	4,995,000	3,000	1,604,000	2,895,000	7,877,000
July	4,862,000	21,000	1,612,000	2,709,000	8,439,000
August	5,149,000	20,000	2,639,000	2,733,000	8,186,000
Total Jan.-Aug.	40,523,000	51,000	14,403,000	25,106,000	.....
August, 1925	4,465,000	1,000	1,944,000	3,528,000	9,575,000
LUBRICANTS (BBls.)					
January, 1926	2,649,000	2,000	727,000	1,633,000	7,544,000
February	2,426,000	1,000	789,000	1,273,000	7,909,000
Mar	2,623,000	4,000	740,000	2,156,000	7,604,000
April	2,670,000	3,000	913,000	2,032,000	7,368,000
May	2,856,000	11,000	715,000	1,864,000	7,656,000
June	2,682,000	3,000	984,000	2,043,000	7,314,000
July	2,847,000	1,000	746,000	2,089,000	7,327,000
August	2,836,000	2,000	660,000	2,279,000	7,226,000
Total Jan.-Aug.	21,589,000	27,000	6,274,000	15,369,000	.....
August, 1925	2,675,000	4,000	872,000	1,931,000	6,728,000

WAX (Pounds)	Production	Imports	Exports	Domestic Shipments	Stocks Ends of Month
January, 1926	52,630,000	631,000	29,061,000	17,818,000	122,773,000
February	49,922,000	668,000	28,709,000	20,690,000	123,964,000
March	55,329,000	456,000	25,005,000	24,403,000	130,341,000
April	54,985,000	647,000	31,560,000	18,329,000	136,084,000
May	56,050,000	213,000	23,968,000	18,983,000	149,396,000
June	50,672,000	812,000	27,211,000	18,415,000	155,254,000
July	54,267,000	2,089,000	30,768,000	24,138,000	156,704,000
August	54,440,000	968,000	26,906,000	20,141,000	165,065,000
Total Jan.-Aug.	428,295,000	6,484,000	223,188,000	162,917,000	.....
August, 1925	47,456,000	1,338,000	25,717,000	18,933,000	117,086,000
GAS and FUEL OILS (BBLS.)					
January 1926	29,319,000	863,000	3,612,000	.....	*23,266,000
February	27,067,000	1,585,000	3,190,000	.....	*21,445,000
March	29,642,000	947,000	2,345,000	.....	*20,267,000
April	28,827,000	1,148,000	3,475,000	.....	*19,773,000
May	30,321,000	1,368,000	2,737,000	.....	*20,841,000
June	29,236,000	1,856,000	3,370,000	.....	*22,554,000
July	31,351,000	1,485,000	2,427,000	.....	*25,696,000
August	31,056,000	1,629,000	3,582,000	.....	*26,500,000
Total Jan.-Aug.	236,819,000	10,881,000	24,738,000	.....	.....
August, 1925	33,502,000	968,000	2,523,000	.....	*29,863,000

*These stocks for east of California only.

Crude Oil Situation by Fields

(Barrels of 42 U. S. Gallons)

Fields	Aug. Daily Average Production	July Daily Average Production	Jan.-Aug. Production 1926	Jan.-Aug. Production 1925	‡†Aug. Daily Average Deliveries	*‡†July Daily Average Deliveries	‡Jan.-Aug. 1926 Total Deliveries	‡Jan.-Aug. 1925 Total Deliveries
Appalachian	79,548	80,548	18,827,000	18,412,000	86,258	81,097	18,877,000	18,973,000
Lima-Indiana	5,709	5,968	1,400,000	1,459,000	7,000	7,322	1,640,000	1,586,000
Michigan	226	161	29,000	.....	226	161	29,000	.....
Illinois-S. W. Indiana	23,355	23,774	5,642,000	5,682,000	32,387	27,742	4,773,000	5,605,000
Mid-Continent	1,176,095	* 1,155,607	267,353,000	286,151,000	1,257,548	1,215,323	291,693,000	295,449,000
Gulf Coast	153,968	* 114,387	24,216,000	21,984,000	112,226	132,194	26,179,000	21,496,000
Rocky Mountain	101,742	108,258	25,554,000	22,867,000	108,000	108,710	24,248,000	23,038,000
California	605,325	604,619	147,596,000	153,432,000	** 652,129	** 632,969	157,686,000	126,564,000
Total Domestic	2,145,968	2,093,322	490,617,000	509,995,000	‡ 2,255,774	‡ 2,205,517	‡525,125,000	‡492,719,000
Imports	172,000	167,258	42,143,000	44,298,000	.....	.....	.....	.....
Deliveries of Foreign Crude	.....	.....	.....	.....	166,871	165,387	42,021,000	44,059,000
Exports	.....	.....	.....	.....	34,935	55,677	10,382,000	9,505,000
Total New Supply	2,317,968	2,260,580	532,760,000	554,293,000	.....	.....	.....	.....

*Revised. †Deliveries to refineries or other consumers, but not necessarily actual consumption in month of delivery. ‡Includes exports. **Includes fuel oil.

Gasoline Situation by Districts

(Barrels 42 U. S. Gallons)

Districts	Aug. Daily Av. Output	July Daily Av. Output	Aug. Chge. %	Aug. Daily Av. Ship.	July Daily Av. Ship.	Aug. Chge. %	Stocks Aug. 31 1926	Stocks July 31 1926	Stocks Aug. 31 1925
East Coast	120,548	128,653	—6.29	145,451	134,755	+ 7.77	7,460,000	8,232,261	7,580,667
Appalachian	33,871	31,238	+8.43	37,085	35,796	+ 3.60	675,000	774,642	731,762
Indiana-Illinois	110,968	114,595	—3.16	137,175	138,809	— 1.17	3,737,000	4,549,428	4,138,905
Oklahoma Kansas	148,355	141,767	+4.65	153,983	158,866	— 3.07	2,753,000	2,927,476	2,886,166
Texas	169,581	164,016	+3.39	194,625	179,316	+ 8.53	3,248,000	4,024,380	4,018,809
Louisiana-Arkansas	51,097	50,820	+0.54	66,507	46,717	+42.35	3,026,000	3,503,714	4,468,143
Rocky Mountain	47,129	43,485	+8.38	61,122	57,598	+ 6.12	3,781,000	4,214,786	3,370,500
California	138,322	129,514	+6.80	145,322	132,161	+ 9.95	9,871,000	10,088,000	9,488,762
Total U. S.	819,871	804,098	+1.96	941,290	884,019	+ 6.47	34,551,000	38,314,690	36,683,714
Texas Gulf Coast	132,613	127,710	+3.84	157,539	137,996	+14.16	2,871,000	3,643,738	3,489,857
Louisiana Gulf Coast	38,581	39,607	—2.59	54,693	34,753	+57.36	2,951,000	3,450,476	4,364,738

Runs to stills of all oils averaged 2,356,900 daily, another record for August. Of that volume 2,184,100 barrels was crude and the remainder rerun stock and natural gasoline. Runs in July averaged 2,337,600 barrels daily of which 2,175,600 barrels was crude.

The August report was compiled from operating statistcis of 333 refineries having a rated daily capacity of 2,721,000 barrels. These plants were operated at 80 per cent of their rated capacity.

Natural Gasoline and Motor Blend

Barrels

Districts	Daily Aver. Production Aug. (net)	Daily Aver. Production July (net)	Stocks End of August	Stocks End of July	Motor Fuel Blends Made in August Total	Motor Fuel Blends Made in July Total	Stocks of Blends End of August	Stocks of Blends End of July
Appalachian	3,942	4,012	60,667	55,429	11,190	12,952	8,524	8,524
Indiana, Illinois, etc.	892	880	7,214	6,262	2,190	2,285	452	524
Oklahoma, Kansas	32,917	32,446	320,119	370,404	263,143	241,857	45,262	34,238
Texas	14,727	14,135	123,952	135,881	27,643	31,357	5,095	5,785
Louisiana-Arkansas	5,010	5,022	25,048	26,333	8,286	5,929	10,429	9,547
Rocky Mountain	3,032	2,792	11,310	10,212	6,095	5,381	5,119	3,786
Total east of California	60,520	59,287	548,310	604,523	318,547	304,524	74,881	62,404
California	25,390	25,474	42,880	25,500	.....	.....	571	619
Total United States	85,910	84,761	591,190	630,023	.....	.....	75,452	63,023

Kerosene Situation by District

Barrels

DISTRICTS	Aug. Daily Av. Output	July Daily Av. Output	Aug. Ch'ge. %	Aug. Daily Av. Ship.	July Daily Av. Ship.	Aug. Ch'ge. %	Stocks Aug. 31, 1926	Stocks Aug. 31 1926	Stocks Aug. 31, 1925
East Coast	31,806	28,324	+ 12.29	36,257	24,068	+50.64	1,634,000	1,771,976	1,895,905
Appalachian	11,451	10,739	+ 6.630	11,536	9,303	+24.31	237,000	239,619	279,643
Indiana-Illinois	13,000	12,651	+ 2.760	15,362,	11,672	+31.55	609,000	682,214	982,006
Oklahoma-Kansas	22,839	21,449	+ 6.48	23,009	27,763	—17.15	362,000	367,285	609,690
Texas	42,548	43,966	— 3.23	35,742	42,349	—15 60	1,971,000	1,760,024	2,909,071
Louisiana-Arkansas	20,258	14,638	+24.73	18,169	956	+1800.52	1,578,000	1,513,261	929,119
Rocky Mountains	7,032	5,563	+26.40	7,493	5,214	+43.54	278,000	292,476	288,119
California	17,161	19,516	—12.06	26,677	17,387	+53.43	1,517,000	1,812,000	1,664,952
Total U. S.	166,097	156,847	+ 5.89	174,245	138,710	+25.61	8,186,000	8,438,855	9,559,286
Texas Gulf Coast	35,322	37,166	— 4.96	28,114	38,706	—27.41	1,690,000	1,466,547	2,696,500
Louisiana Gulf Coast	18,677	12,949	+43.46	16,258	*— 585	.....	1,554,000	1,478,976	914,381

*Probably receipts from inland refineries in excess of daily shipments.

Lubricants—Situation by Districts

Barrels

DISTRICTS	Aug. Daily Av. Output	July Daily Av.Output	Aug. Ch'ge. %	Aug. Daily Av. Ship.	July Daily Av. Ship.	Aug. Ch'ge. %	Stocks Aug. 31, 1926	Stocks Aug. 31 1926	Stocks Aug. 31, 1925
East Coast	25,000	30,095	—16.93	23,580	31,440	—25.00	2,558,000	2,513,762	2,351,000
Appalachian	13,161	13,115	+ 0.35	12,194	12.161	+ 0.27	942,000	911,524	865,000
Indiana-Illinois	8,516	8,416	+ 1.18	11,290	9,449	+19.48	627,000	713,071	726,000
Oklahoma-Kansas	6,419	6,747	— 4.86	7,161	7,592	— 5.72	377,000	400,048	351,000
Texas	25,931	23,118	+12.16	29,516	19,680	+49.97	1,558,000	1,669,071	1,383,000
Lousiana-Arkansas	3,194	1,389	+129.94	2,903	1,896	+53.11	103.000	94,190	114,000
Rocky Mountain	1,709	1,895	— 9.81	2,032	1,988	+ 2,21	166,000	176,452	125,000
California	7,548	7,064	+ 6.85	6,065	7,226	—16.07	895.000	849,000	812,000
Total U. S.	91,484	91,840	— 0.38	94,742	91,434	+ 3.62	7,226,000	7,327,119	6,727,000
Texas Gulf Coast	19,258	22,385	—13.52	23,032	18,904	+21.83	1,516,000	1,633,214	1,337,000
Louisiana Gulf Coast	3,032	1,346	+125.26	2,806	1,846	+52.00	101,000	94,095	96,000

Gas and Fuel Oils—Situation by Districts

DISTRICTS	Aug. Daily Av.Output	July Daily Av.Output	Aug. Ch'ge. %	Aug. Daily Av. Ship.	July Daily Av. Ship.	Aug. Ch'ge. %	Stocks Aug. 31, 1926	Stocks Aug. 31 1926	Stocks Aug. 31, 1925
East Coast	157,258	171,750	— 8.44	138,452	142,866	— 3.08	6,985,000	6,401,952	7,420,000
Appalachian	21,064	19,637	+ 7.27	20,000	17,192	+16.33	693,000	659,714	936,000
Indiana-Illinois	54,032	56,326	— 4.07	51,839	49,059	+ 5.64	1,526,000	1,458,214	1,608,000
Oklahoma-Kansas	92,774	98,758	— 6.06	81,419	75,521	+ 7.81	5,247,000	4,895,357	4,403,000
Texas	169,774	172,563	— 1.62	165,129	144,434	+14.32	8,080,000	7,935,976	8,881,000
Louisiana-Arkansas	93,871	90,951	+ 3.21	109,484	80,071	+36.61	2,473,000	2,956,785	5,159,000
Rocky Mountain	21,645	21,245	+ 1.88	18,194	20,716	—12.12	1,496,000	1,588,500	1,455,000
California	391,387	380,097	+ 2.97	.....	.....	.....	.....	.....	.....
Total U. S.	1,001,806	1,011,327	— .94	*584,517	*529,859	+10.31	*26,500,000	*25,696,500	*29,863,000
Texas Gulf Coast	127,548	130,177	— 2.02	121,258	109,551	+10.68	7,003,000	6,807,785	7,245,000
Louisiana Gulf Coast	47,387	50,502	— 6.17	63,097	39,260	+60.71	1,742,000	2,229,380	.....

*East of California only.

Daily Average Runs to Stills—All Oils

Barrels

	East Coast	Appala.	Ind.-Ill.	Okla.-Kans.	Texas	La.-Ark.	Rocky Mt.	Calif.	Total U. S.
January, 1926	334,742	73,516	185,709	261,903	426,129	196,484	87,548	558,097	2,120,900
February	360,036	78,428	192,964	256,857	434,674	200,357	96,250	549,821	2,169,400
March	369,032	74,677	187,419	250,742	422,774	203,839	98,355	563,228	2,176,500
April	365,400	77,133	203,033	266,000	451,667	205,867	98,733	557,900	2,225,200
May	373,516	81,677	211,065	293,903	431,451	199,161	101,322	588,613	2,280,700
June	382,800	85,433	211,467	293,267	446,867	207,433	107,033	574,033	2,308,300
July	418,742	83,097	210,193	292,645	448,516	206,839	102,355	575,193	2,337,600
August	395,935	87,613	208,677	300,484	446,484	211,129	106,903	599,643	2,356,900

Choke, Asphalt, Miscellaneous Products

	Coke Output (Tons)	Coke Stocks (Tons)	Asphalt Output (Tons)	Asphalt Stocks (Tons)	Miscel. Products Output (Bbls.)	Miscel. Products Stocks (Bbls.)	Unfin. Oil Output (Bbls.)	Unfin. Oil Stocks (Bbls.)	Losses (Bbls.)
January, 1926	73,701	230,566	162,383	174,564	491,652	1,063,619	2,097,000	* 901,905	1,995,000
February	64,105	210,247	152,468	182,063	481,428	1,073,238	2,340,500	* 924,000	1,767,000
March	80,689	219,820	210,596	195,052	597,810	1,217,119	2,195,928	* 930,905	2,059,000
April	76,031	216,163	198,598	239,953	572,381	1,138,095	2,481,952	* 923,452	1,982,000
May	79,982	234,025	248,390	229,819	779,310	1,210,428	2,756,024	* 921,000	2,270,000
June	81,326	246,707	300,970	200,881	784,476	1,011,381	2,767,000	* 954,310	2,308,000
July	83,358	260,727	281,196	184,853	800,310	897,452	2,927,214	† 7,853,000	2,419,000
August	89,100	277,668	305,944	200,175	733,000	858,000	2,848,000	12,562,000	2,605,000

*Subject to revision. †Revised.

Outlines of Factors Involved in Getting Greater Recovery from Old Pools

By Frank M. Brewster
Petroleum Engineer, Bureau of Mines
Before West Virginia Oil & Natural Gas Ass'n., Parkersburg meeting, Sept. 28

INCREASING recovery means better utilization of the natural forces and supplementing these forces when they are depleted. The restoration of pressure can be feasibly accomplished by forcing gases or liquids through the sands. A plentiful supply of either is necessary. Natural gas, air or a combination of both are the only gases available in sufficient quantities and at negligible cost. Water is the only liquid of which there is an adequate supply.

The amount of oil left underground in fields that have been abandoned offer more attractive opportunities for increased production than the wild cat territory. The oil is known to be there and requires only the ingenuity of man to get it.

In recent experiments it has been demonstrated that certain dissolved gases decrease the viscosity.

This factor has a material effect on the future recovery of oil. Even near wells that are economically exhausted, not only are the grains of sand still coated with oil but the pores remain full of oil. This oil has been robbed of its lighter fractions and is now dead oil. The introduction of certain gases or substances soluble in this oil will tend to lower the viscosity of the oil so that it can be moved more easily. Hence it can be seen that it is essential in new fields and more so in the old that the gas must be conserved and made to do work not only in lifting the oil but in keeping the viscosity of the oil at its lowest point. In our present methods of producing it takes the gas dissolved and occluded in seven barrels of oil to produce one barrel of oil, thus leaving six barrels of dead oil in the sands. If this natural force of dissolved and occluded gas is used to best advantage our recovery can be materially increased.

The Propelling Force

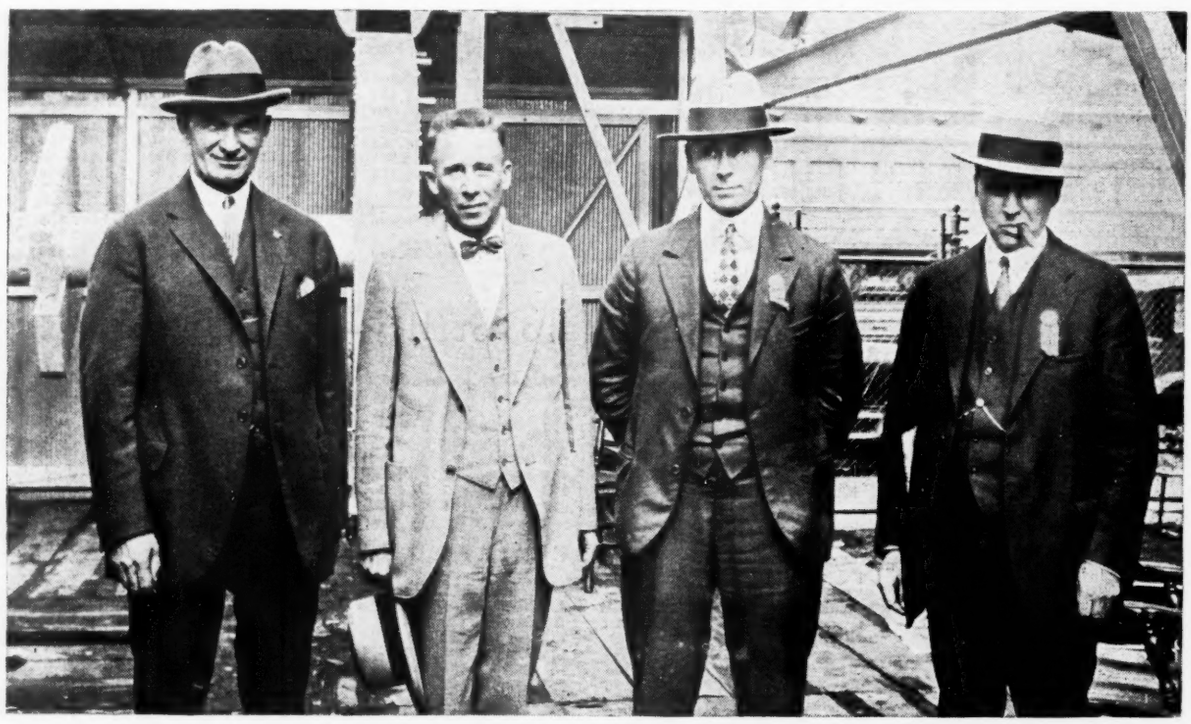
GAS is the most active agent in the expulsion of oil, while capillarity and adhesion are probably the most active agents in the retention of oil in the sand. Gas pressure has to be excessive to overcome this capillary force. The radius of influence of wells in oil drainage is an important consideration in planning and development. This undrained volume of sand increases with the distance between wells. Due to friction a greater force is necessary to cause movement of the oil 100 feet from a well than is necessary to move oil one foot from the well.

With a uniform pressure throughout the sand it follows that the areas near the well are more completely drained than those at a distance. But uniform pressures do not prevail throughout the life of a well. Hence the oil in the sand immediately surrounding the well will get the benefit of maximum pressure and needs it least while oil located at some distance from the well will have to move under a much reduced pressure prevailing during the latter part of the period of extraction. Furthermore, there is the probability of gas associated with the distant oil escaping through the unsaturated sands in the vicinity of the well, without doing useful work.

Pumping Air or Gas

THIS substantiates the practice of pumping air or gas, or a combination of both, into a sand and holding a pressure on the sand, not as a high differential in pressure between inlet and outlet wells but a nearly uniform pressure over the entire field.

Under this pressure part of the gas



Several branches of the oil and gas industry represented here. Left to right, are: Smith Wahn, oil and gas producer, Parkersburg; Walter T. Hazel, sales manager, Parkersburg Rig & Reel Co.; Harry W. Bell, petroleum engineer, Pure Oil Co., formerly of the Louisiana department of conservation and prior to that of the U. S. Bureau of Mines; M. G. Service, Waverly Oil, Pittsburgh.

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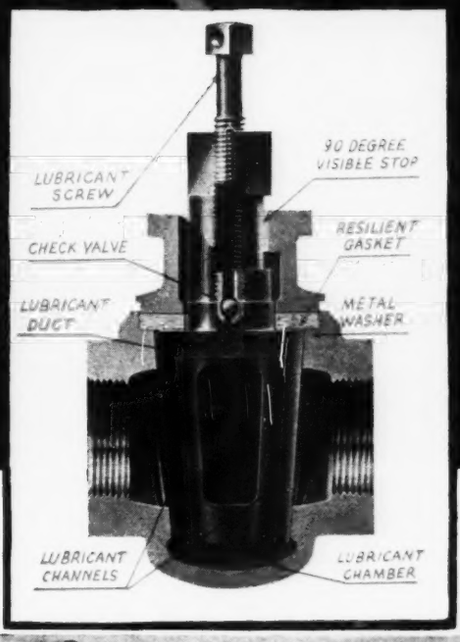
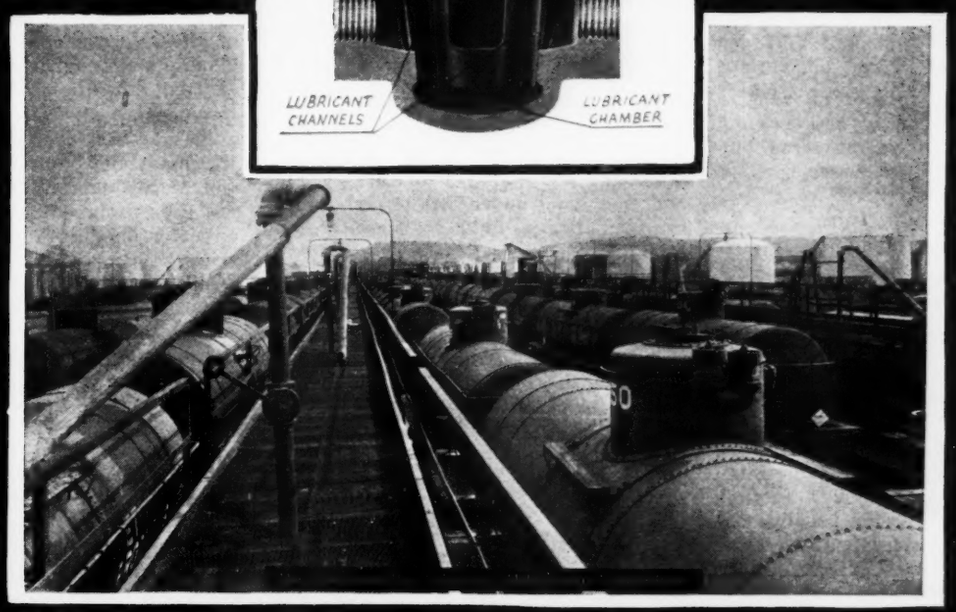


Note that the bottom of the plug is entirely closed. Not even a nut to come loose. This valve won't leak! May we send you our new catalog?



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Merco Nordstrom PLUG VALVES

Two "Venezuelans," by adoption, at least. On the left is Tony Statts, driller, who will soon leave for Maracaibo to succeed Howard Monks as representative of the Parkersburg Rig & Reel Co., Monks to return home for two months before going to another South American assignment for the same company. On the right is Jack Hill, rig builder, who has recently returned from Venezuela

will dissolve in the oil and will decrease the viscosity of the oil.

Movement of the thinner oil can be effected with less energy and greater quantities of oil can be recovered but the dissolved gas is no longer capable of exerting any propulsive force and must be replaced with other gas to propel the oil to the hole.

The forces moving oil are not constant and the drainage area constantly decreases. When a well is drilled the pressure is relieved at that point allowing both oil and gas to escape. This reduction in pressure allows the volume of gases to increase, thus they grow larger and bring oil with them as they approach the hole. As the resistance to movement is greater for oil than for gas, the gas is usually exhausted first and this frequently means the economic limit of the production of oil. For in dissipating the gas, the oil has been robbed of its motive force and also of its lighter constituents and is left as a relatively heavy, viscous, dead oil with a high adhesive attraction and increased surface tension which the force of gravity is barely able to move.

Gas Oil Ratio

IN our present method of flowing wells the gas is not made to do very much useful work in lifting oil to the surface. It is not uncommon to find flowing wells producing 4000 feet of gas per barrel of oil. Under isothermal expansion this could be reduced to less than 300 feet of gas per barrel of oil.

In old fields where the gas has been exhausted it will be necessary to replace this gas, with air, gas, or other substances to revive the dead oil and propel it to the hole to secure additional recovery.

Isothermal Expansion

IT has been demonstrated experimentally, both in the laboratory and on producing wells, that a mixture of fluid and gas acts under isothermal conditions in lifting fluid by gas through tubing.

It is possible then by the proper design and calculation of the inlet orifices in the perforations of the tubing to produce oil under conditions approaching isothermal expansion. This means an enormous saving of gas as the gas is made to work at almost its highest efficiency in lifting the oil. This will prolong the flowing life of the well and increase the ultimate recovery.

Hydrostatic Pressure

HYDROSTATIC pressure is that force exerted by a liquid and is an active agent in the expulsion of oil. The pressure or head on the oil must be sufficient to overcome capillary attraction and pore friction. This force is enduring and usually constant throughout the life of the field. The hydrostatic head developed within a sand is directly proportional to the depth of the superimposed column of fluids. In many fields containing oil or gas sands it is found that the closed in initial pressure increases with depth and is proportional to the vertical depth below the outcrop of the stratum in which the oil or gas occurs. If edge water encroaches or if water is intentionally introduced to fill the voids left by extraction of oil, theoretically, complete recovery could be expected. Under normal operating conditions, however, it seems improbable that it is capable of accomplishing anything more than a slow, incomplete extraction.

The pores are wet with oil and afford no capillary attraction for the water. The surface tension of the oil being lower than that of the water will cause the oil to adhere to the walls of the pores and resist displacement by water.

The displacement of oil by water usually takes place very irregularly and is responsible for the trapping of large quantities of oil where a well, or group of wells, has flowed unrestricted and drawn the water through the coarser streaks in the sand. The water tends to force the oil out of the center of the pore leaving a larger amount of oil adhering to the walls of the pore. This unrestricted producing is also responsible for water coning around a well. In a field producing entirely by hydrostatic pressure or where gas pressure is very low and hydrostatic pressure high, great care must be taken in spacing the wells so that the water drive can be controlled. Wells ahead of a flood, natural or otherwise, cannot be produced too rapidly as water has a greater surface tension than the oil and therefore a corresponding decrease in capillary attraction, and will tend to bypass the oil. Unless the movement of the flood is controlled on the producing wells by back pressure or restricted flow the water tends to finger out causing the oil to move at right angles to the direction of the predominating water movement. Advantage can be taken of this factor by staggering the spacing of the wells.

Water flooding has its hazards. Certain chemicals in the water may unite with chemicals in the sand or oil, or the water may dissolve certain salts in the sand. Later these may be deposited due to lower saturation point of the solvent or by further chemical action. These deposits are frequently impervious and will dam up the pore space.

Restoring Depleted Pressure

PUMPING of air or gas into a sand more nearly conforms to the natural conditions existing in the sand before depletion, and is much cheaper than either flooding or mining, the only additional equipment necessary being a compression plant which is combined as a compression and gasoline extraction plant, as gasoline vapors are picked up by the passage of air or gas through the sands.

This process is much cheaper, frequently costing as low as $50 an acre and seldom requires the drilling of additional wells, while in flooding or mining the cost is several thousand dollars per acre. In addition, compressions can be applied at any time during the life of a field and leave the sand in such a condition that it can be operated by any new processes that may be developed.

Oil and gas are migratory and surface boundary rights do not hold them in place. Gas or air pumped into a

tract will not stop at the boundary line and will carry oil across with it. Independent operation is not usually profitable. It requires unit operation on the entire pool to extract the most oil and make it a profitable undertaking.

Vacuum Pumping

PULLING a vacuum on a sand has been used for a number of years. But seldom has the process been profitable in the production of oil. The lighter parts of the oil are pulled off due to a lower pressure and the gas has been enriched so that gasoline extraction has increased and helped to offset the expense of pumping.

The highest differential in pressure possible by a vacuum pump is 14.7 pounds at sea level and less for higher altitudes. Probably the greatest negative pressure on the commonly used plants would not exceed 13 pounds. This same propelling force could be exerted much easier and cheaper by installing a compressor and forcing 13 pounds positive pressure on an adjoining well.

Vacuum pumping has several disadvantages; all lines, tubing and bradenhead connections must be tight. When a well is "pulled" air rushes in driving the oil away from the hole and often requires several days gas pumping before production returns.

Underground Losses

IN fields where dry gas sands are found in conjunction with or in close proximity to oil sands there is always the menace of depleting the gas pressure and allowing the oil to migrate into the dry gas sand. From 80 to 90 per cent of the oil that enters a dry sand can never be extracted by the ordinary methods of production. And even with the improved methods it is doubtful if more than an additional 25 per cent could be extracted, thus leaving 55 to 65 per cent of the oil beyond recovery that was originally available by the ordinary methods of production.

This is an enormous waste that does not show at the surface. The practice of blowing or producing gas wells until they bring oil to the hole is the greatest waste of oil and energy that is chargeable to the industry. For every barrel of oil produced in this manner there is left in the formerly dry sand three to four barrels of oil that is beyond recovery. Both the oil and gas could have been saved had wells been drilled down on the slope and the oil produced first. This would have saved the oil and utilized the natural energy of the gas.

By utilizing the stored energy in a gas sand or by returning gas produced with the oil and thus restoring the depleted pressure, longer flowing life of the wells would be maintained. And by the use of properly designed gas or air lifts would obviate the necessity of ever installing pumping equipment during the life of the pool.

By the use of compressed air or gas the production can be controlled at will. There would not be periods of over-production. Production could be accelerated or retarded at will. Pres-

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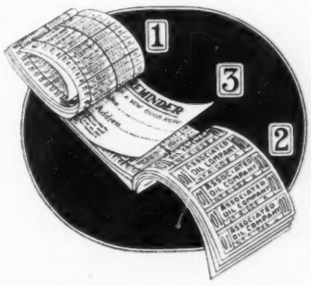

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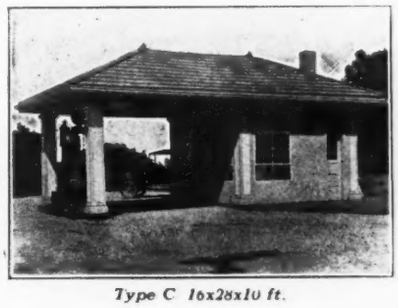

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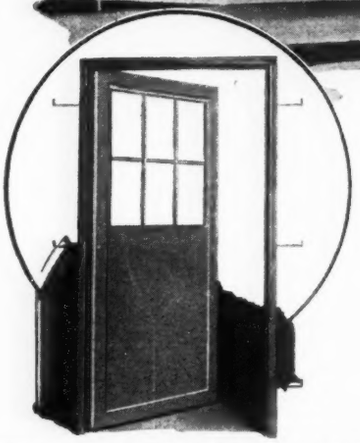

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sure could be stored in the sand for future use and instead of being a detriment to the sand or wells would actually be beneficial. It is one of the best methods of stabilizing the producing market that has been so far advanced. It is not necessary to wait until the pool has been depleted before applying artificial pressure and it is advisable to start restoration of pressure as soon as the gas pressure has dropped to a point where compressors can "buck" the well pressure. Thus surplus gas during flush production can be saved and utilized to advantage. The gasoline can be extracted to offset compression costs. Theoretically the ideal situation would be the returning of all surplus gas to the sand until all the oil recoverable under this method had been extracted, thus leaving a gas reserve for future use.

Cotton Gins Prospects For Gas Oil Now

HUNTSVILLE, ALA.—Manufacturers of Diesel type engines have been very successful in this section recently in placing their equipment with operators of cotton gins, which promises to open up a new outlet throughout the south for the sale of gas oil. At this time last year all of the 10 gins in the region of Huntsville were using steam power and burning coal. At the opening of the 1926 season five of the gins were using internal combustion engines and burning about a 36 gas oil.

The average gin in this section may be considered to have four gin-heads (units which separate the cotton from the seed) and such a plant will consume upwards of 55 gallons of gas oil a day, four months of the year starting about Sept. 15. All of the business from these five installations has gone to the Alabama Oil Co. here and the manager, Guy J. Spencer, is of the opinion that another year will see all the gins in the region discard coal. The saving as a result of burning oil is sufficient to justify a gin owner to replace a practically new steam power plant.

The new gas oil gallonage has caused the Alabama Oil Co. to install a new 12,000-gallon tank for the material and put a truck in the dirty service. In addition to the gin business, a few large homes in Huntsville are installing oil burners and oil men generally hope this business will develop also. Domestic oil burners are not popular in the south because homes are quite generally heated with open fires during the short and comparatively mild winters. In large establishments where steam or hot air furnaces are employed, oil may some day be popular, for although oil might be a much more expensive fuel than coal, fuel is not such a big item in the family budget here as it is in northern states and the luxury of burning oil is not proportionately so expensive as where domestic oil burners are more numerous. But the owner of a small home, having no basement, not built to withstand hard winters, is a difficult prospect for a burner salesman.

Many a Dollar is Saved by Keeping Eyes Open to Gas Wastage

By S. W. Meals
Vice-President, Carnegie Natural Gas Co.
Before West Virginia Oil & Natural Gas Association, Parkersburg, Sept. 29

YOUR worthy secretary drafted me to write a paper on "Care of Field Property"; however, for convenience, I have taken the liberty of changing the subject to "A Stitch in Time Saves Nine." I believe this slogan can be applied to all phases of the Gas Business, at least to the care of field property.

We are all proud of West Virginia's record as a gas producing state although for the last two years it has fallen from first place in production of natural gas—Oklahoma and California having produced more gas than West Virginia. But for a number of years West Virginia was first, and although our territory is gradually being depleted, I prophesy that these old West Virginia hills will be giving us natural gas as long and perhaps longer than any other state in this country. You know that most of our producing sands are free from water and in some of the larger western fields it is even now necessary to hold a back pressure on the wells to keep the water from ruining them.

I believe the natural gas business is still in its infancy. We have learned our lesson of wastefulness and are now conserving our gas in every way possible. Why, it is only a few years back when we would not save a well if it did not produce close to 1,000,000 cubic feet but now we are drilling for 100,000 cubic feet wells and saving them if they make less than half this amount. The average production per well in West Virginia is less than 40,000 cubic feet per day.

You can readily see why it is so important to take care of the small wells and keep them in shape to produce every day. They are needed, for our big volume of gas comes from these many small wells. The production from West Virginia for 1925 in round figures was 176,000,000,000 cubic feet; for 1924, 178,000,000,000 cubic feet; for 1923, 186,000,000,000 cubic feet and for 1922, 184,000,000,000 cubic feet.

The production of natural gas in United States for 1925 was close to 1,200,000,000,000 cubic feet. We can not grasp what these figures are, but if the heat value in this amount of gas was in bituminous coal, it would fill 2,000,000 forty-ton cars and if these cars were in one train it would encircle the globe or make up about seven coal trains that would reach from New York to San Francisco.

West Virginia produced one-seventh of the above amount of gas, or her proportion would make up one train. I said we were proud of West Virginia as a gas producing state and I am also proud of the fact that it was in roustabouting over these hills and roughing it that I received the greater part of the practical experience I have of the oil and gas business. Digging ditches, laying pipe lines, casing and tubing wells, etc. not only gives one an appetite and hard muscle, but experience that no one can take from you.

Neatness on the Lease

IT is mighty good for a fellow to have some pride about himself. Not only that he is capable of doing things and doing them right, but pride in keeping everything he has to do in proper shape, whether it is a set of books, a set of tongs or a set of bull wheels. There is nothing that attracts one's eye so quickly as a neat and well kept lease, casing yard, warehouse or compressing plant. One must have some pride about himself if he ever can expect to climb the ladder in any business. A good many years ago as a pumper on Flaggy Meadow, south of Mannington, W. Va., we tried to out-do the other fellow in keeping up our lease, our old steam engine running smoothly and everything shined up. I recall, one well stood close to the public road. Well, I played with that engine for weeks to get it in shape so that any one passing could not hear it run. If a string of tubing and rods had to be pulled, we tried to beat some other gang's record of pulling and putting the well back to pumping. I tell you, a little spirit of contest among the fieldmen is a good thing and should be encouraged.

But I have drifted away from our slogan. Let us apply it to the care of gas wells, for these are the source of all our company's business and it is the care and keeping of our wells which keeps us as well as the company. A well tender is one of the most important employees a company has. He must know his wells, for gas wells like oil wells have their individuality. What will do for one may not do for some other and it is only the well tender who knows this. Should he find that the water is gradually getting the best of the well, some artificial means must be used to help the gas rid the well of water. Once the well is entirely drowned out, the company has lost the use of the gas and many wells when once drowned out do not produce as before. Some will never come back at all. Cavings are just as bad, as you know water and mud are enemies of gas and gas producing sands. Mud is all right in its place—a mighty good protection to casing—but its place is on the outside of the casing, not inside. Wells to do their best and to be operated at a low cost should be cased to the gas producing sand.

Costliness of Leaks

OUR slogan can be used in the care of branch lines, main lines and service lines and with these we will include the fittings as it is from these we find the larger share of our leakage. If all the wells are kept in shape to produce and then 20 to 40 per cent of the gas is lost in leakage between the well and the meter, the company is required to drill and maintain this percentage more gas wells, and I will say that a leak taken in time will save more than nine. No doubt all of you have read Messrs. Bennett and Rawlings', of the Bureau of Mines, report on leakage. Bulletins were issued and many companies sent these to their fieldmen. After their report of the investigation of leakage, we can better realize what a very small leak will amount to in dollars and cents over a period of a year. A $\frac{1}{64}$-inch opening on a line carrying 100 pounds pressure and the gas figured at 18 cents per thousand will leak gas enough to pay a line-walker's salary for five or six months. Every employee of a company should keep his eyes, ears and nose open for signs of leaks and repair or report them at once and I believe some cooperation among the companies along this line would be of much value. We will appreciate it if an employee of any other company will report to any one of our employees leaks they may find on any of our wells or lines. We find it good practice to send a stranger out to make inspections. Naturally he tries to find all the leaks he can and you know it does not go down very well to have a stranger show up a line-walker or find his leaks for him, so he can not get careless or he will get caught.

Last summer I made a trip over one of the large gas company's property in Ohio and I note that wherever a gas line was exposed it was painted. I am like the flapper—I believe in using plenty of paint but I would much rather see it on well fittings, steel derricks or pipe lines than on the face. You have noticed when driving through the country, the cozy little house setting over on the bank with flower beds around the place, all the buildings painted or whitewashed, everything in good order and you remark, "Well, there is somebody living there" but as you drive on—perhaps the very next place you pass

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—you see the fences down, buildings in need of repair, no paint or whitewash, the weeds taking the place and you think, "Well, that fellow is only a jump ahead of the sheriff."

An oil or a gas lease can be summed up in about the same way. When a lease is kept in proper shape, we know there is someone on the job, and don't forget that the foreman, superintendent or manager is taking note of these employees who are on the job and have the pride to keep the company's property in perfect order.

Extends Throughout System

OUR slogan will apply to compressing plants, casing yards, warehouses, fittings, machinery or trucks. If repairs are made promptly, threads oiled or paint used where needed, one could not estimate the saving that the Company would realize. So often employees may see things that should have prompt attention, or where repairs should be made or a leak reported, but pass by on the other side with a thought —"It isn't my funeral," but I am not so sure but what that feeling is the beginning of his funeral.

The keynote of the times is efficiency, and as gas is a "fugitive commodity," difficult to secure, to confine and handle, and its possession is not certain as to quantity or duration, then surely, we as gas men, should be on our tip toes to not only conserve but do that which is necessary to properly drill and keep our wells in shape that they may produce the maximum amount of gas; and after we secure the gas, protect it by tight tubing, fittings and pipe lines.

Not all the fault for our leaks can be laid upon the fieldman. A large part of it can be traced to the purchasing agents who many times buy from the lowest bidder and one usually gets what he pays for. Many times this happens with supplies which are used to confine this "fugitive commodity" and the company would be many dollars ahead if the purchasing agent had paid the higher price and secured the better made supplies.

Shell Builds Gasoline Plant

LOS ANGELES, CAL., Oct. 7.—The Shell Co. is erecting a natural gasoline absorption plant at Inglewood to handle that company's natural gas in that field. It will be in operation about Oct. 20.

The plant will have a daily capacity of 10,000 gallons of gasoline. Two 5-foot Campbell oil froth absorbers are in use in addition to the new type Campbell froth stripper, or evaporator, which takes the place of the former still. Three Clark compressors are in place.

HOUSTON, Oct. 1—Producers Marketing Co., with offices in the West building, announces that in addition to oils handled under its own name it will hereafter distribute Marland lubricants to service station operators in the Houston district.

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In tar lines, drain lines or others carrying much coke the tar or coke cannot get under the plug and stop the cocks from being closed. Because of the all-iron construction they are not eaten away by the oils and they work well in strong sulphuric acid lines.

But the most important feature is the asbestos packing, which takes up the difference between the expansion of the plug and body and so eliminates the seizing common to other types of cocks. For higher temperatures, cocks of Reading Electric Steel are made.

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Note the few parts, their sturdy proportions, and in the body the arrangement of the U-shaped grooves in which the asbestos packing is vulcanized.

The plug is barffed (a heat treatment) to prevent corrosion and so keep the bearing surface smooth.

Accurate Field Reports Vital to Success Of Oil or Gas Producing Company

PARKERSBURG, W. VA., Sept. 29. THE many varied occupations necessary to carry on the field work of the oil and gas company and the importance to the operating heads of the company of having accurate and detailed reports of this work were brought out by J. C. Chisler, assistant treasurer of the Hope Natural Gas Co., Pittsburgh, speaking before the convention of the West Virginia Oil & Gas Association here Sept. 28th.

"Owing to the nature of the industry, with properties of the oil or gas company extended in small units over a wide expanse of territory, and with numerous ramifications of the business, the task of collecting and preparing accurate data covering all phases of the business is more difficult than in many other lines of business," said Mr. Chisler.

"Oil and gas companies spend large sums annually to secure and maintain accurate records, yet in the matter of accuracy and completeness there is still room for improvement. The results desired can be better assured if the employes engaged in carrying on the physical operations, and also those working in the general office, have a clearer understanding of each other's duties."

Closer cooperation between the field forces and the general office force should be brought about by the company, Mr. Chisler urged. The field force, tired at the end of a day, is inclined to resent the added work of making out reports faithfully and accurately, particularly if they do not know just how these fit into the company's records and how important they are to the general plan of operations.

He brought out, on the other hand, how the office force is often compelled to remain long past closing hours, or take home unfinished work to prepare special reports which may be necessary at times, and how the knowledge on their part of how important those reports were and how they were a vital part of the company's general work would serve to make them bear these added burdens more patiently.

To give an idea of the variety of occupations necessary to the field work of the oil or gas company, Mr. Chisler named the classes of workers in the field organization of his company, including natural gasoline plants. With a few exceptions they would apply to many oil producing companies:

FIELD ORGANIZATION

I.—Production Division

Geologists
Superintendents
Division
Superintendents
Leasers
Abstractors
Right-of-Way Men
Civil Engineers
Rig Builders
Drillers
Tool Dressers
District Foremen
Assistant District
Foremen
Oil Foremen
Gas Well Foremen
Well Tenders
Line Walkers
Meter Readers
Meter Engineers
Meter Repairmen
Oil Well Pumpers
Cleaning Out Drillers
Cleaning Out Tool
Dressers
Bailing Machine
Operators
Teaming Foremen
Veterinary Surgeon
Teamsters
Truck Drivers
Auto Repairmen
Boat Pilots
Boat Engineers
Deck Hands
Warehouse Men
Pipe Machine
Operators
Blacksmiths
Welders
Utility Men
Gang Pushers
Rousters
Laborers
Clerks
Telegraph Operators
Telephone Operators

II.—Transmission Division

(Comprising Stations and Trunk Lines)
Superintendents
Mechanical Engineers
Draftsmen
Construction Foremen
Division Engineers
Chief Engineers
Engineers
Oilers
Boiler House Foremen
Firemen
Coal Shovelers
Ash Handlers
Coal Miners
Filter Men
Water Tenders
Calorimeter Men
Pipe Machine
Operators
Locomotive Engineers
Crane Operators
Machinists
Electricians
Blacksmiths
Welders
Station Repairmen
Carpenters
Utility Men
Warehouse Men
Truck Drivers
Rousters
Laborers
Clerks
Operators
(Telegraph)
Trunk Line Walkers
Trunk Line Repairmen

III.—Distribution Division

Agents
Clerks
Shop Foremen
Inspectors
Line Walkers
Meter Readers
Meter Repairmen
Fitters
Collectors
Bookkeepers

IV.—Gasoline Division

Superintendents
Chemists
Division Foremen
Plant Foremen
Stillmen
Pumpers
Firemen
Pipe Foremen
Pipe Fitters
Repairmen
Welders
Loading Men
Utility Men
Truck Drivers
Gang Foremen
Rousters
Laborers
Clerks

V.—Miscellaneous

Telephone and Telegraph

Foremen
Linemen
Groundmen
Operators

Central Garage

Foremen
Auto Repairmen
Clerks

Central Warehouse

Foremen
Boilermakers
Machinists
Pipe Machine
Operators
Welders
Electricians
Blacksmiths
Pattern Makers
Clerks

The working district office, in charge of the foreman and usually a field clerk, may be likened to a great clearing house, on the one hand of instructions from the general office and, on the other hand, of actual duties well performed and recorded by the field organization.

"The duties of the field clerk are of a great variety and may be briefly enumerated as follows: He is required to —prepare and forward to the general office currently or monthly:

(1) An accurate record of all the company's activities in his district;

(2) Time books and payrolls showing the name of each employee, occupation, rate and amount of time spent on each job;

(3) Transfers covering movement of all materials from one location to another;

(4) Connection and disconnection reports covering gas supplied for drilling wells, cleaning out wells, domestic and free consumers;

(5) Teaming tickets and payrolls;

(6) Inventory of drilling and cleaning out strings;

(7) Monthly reports showing the status of all new work in progress;

(8) Freight and express statements;

(9) Miscellaneous collection reports covering sale of material;

(10) Monthly oil production reports;

(11) Reports covering drilling and cleaning out wells;

(12) Monthly reports covering the use of all tools and machinery;

(13) Monthly reports showing the status of all operating wells in the district.

"The field men who actually construct and operate the pipe lines, compressing stations, drill and operate the wells and perform various other duties assigned them, may, after working long hours, at times under most trying conditions, consider it a real hardship to make out reports covering the day's activities. Nevertheless, the foreman and field clerk are dependent upon this information to complete the various forms in use by the respective companies for transmittal to the general office.

Are Basis of All Reports

"IN the past there has been a tendency on the part of some field men to feel that a great many of the reports which they are required to furnish are unnecessary and after these reports are received by the local office that they are probably not transmitted to the general office and that they have no particular bearing on the success or failure of the business. As a matter of fact, however, these reports are the fundamental basis from which the oil and gas industry's records pertaining both to accounting and operating are compiled.

"Field men by exercising care in preparing reports so that these show in a complete and comprehensive manner the exact conditions and thus give a complete history of what has been accomplished, greatly increase their efficiency because of their becoming more familiar with the company's property under their care. This naturally results not only in the employee's work proving more interesting but likewise it fits him for promotion.

"We cannot stress too much the importance of all reports originating in the field. These must be absolutely correct in every detail since to the degree that such information is correct the management is able to avoid decisions which might otherwise prove very costly. This may be more closely understood from the following illustrations:

"As a well is being drilled, the well 'log' is compiled showing the various sands encountered, weekly reports forwarded to the geenral office showing progress being made; transfers are prepared covering movement of all material and tools to the well, and upon completion, steel line measurement is run and the contractor paid for the total depth drilled as reported by this measurement.

"Rock pressure, volume and open flow tests are taken, a well record is prepared recording the amount of casing and tubing used and remaining in the well, all being forwarded to the general office: the well is shut in and production turned in to the line, at which time we are supposed to have in the general office a complete history of the well with operating reports showing its production, and investment records of its actual cost.

Inaccurate Reports Costly

Let us assume that the well was erroneously reported; that is, the production of the well as shown by

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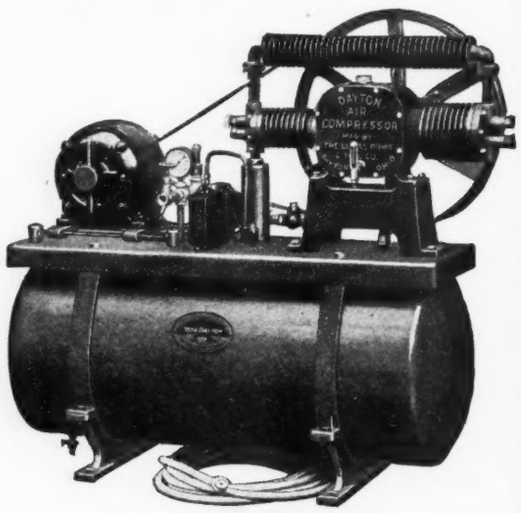

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the reports was greater than the actual production. This might result in additional non-productive wells being drilled or the acquisition of additional acreage of little or no value. Under exactly reverse conditions, where the reports submitted show less than the actual production, an error might prove just as costly to the company in its possible surrender of valuable acreage or the non-development of it.

"The general office is guided in its decisions regarding the further operation or abandonment of wells almost solely by the history of these wells. If there have been errors made recording the facts relative to these wells and thus resulting in an incorrect history, costly errors of judgment may result in the further operation or abandonment of these wells.

"A few of the more common errors made in preparing field reports may be mentioned as follows:

(a) Failure to report correct locations of wells, wrong measurements of property lines frequently being given;

(b) Test of wells incorrectly reported; that is, water for mercury or mercury for water, or wrong reading of gauge;

(c) Failure to report abandonment of competitive wells;

(d) Failure to report wastage of gas, particularly when the wells are affected thereby;

(e) It frequently happens that wrong name and number is given when reporting well test;

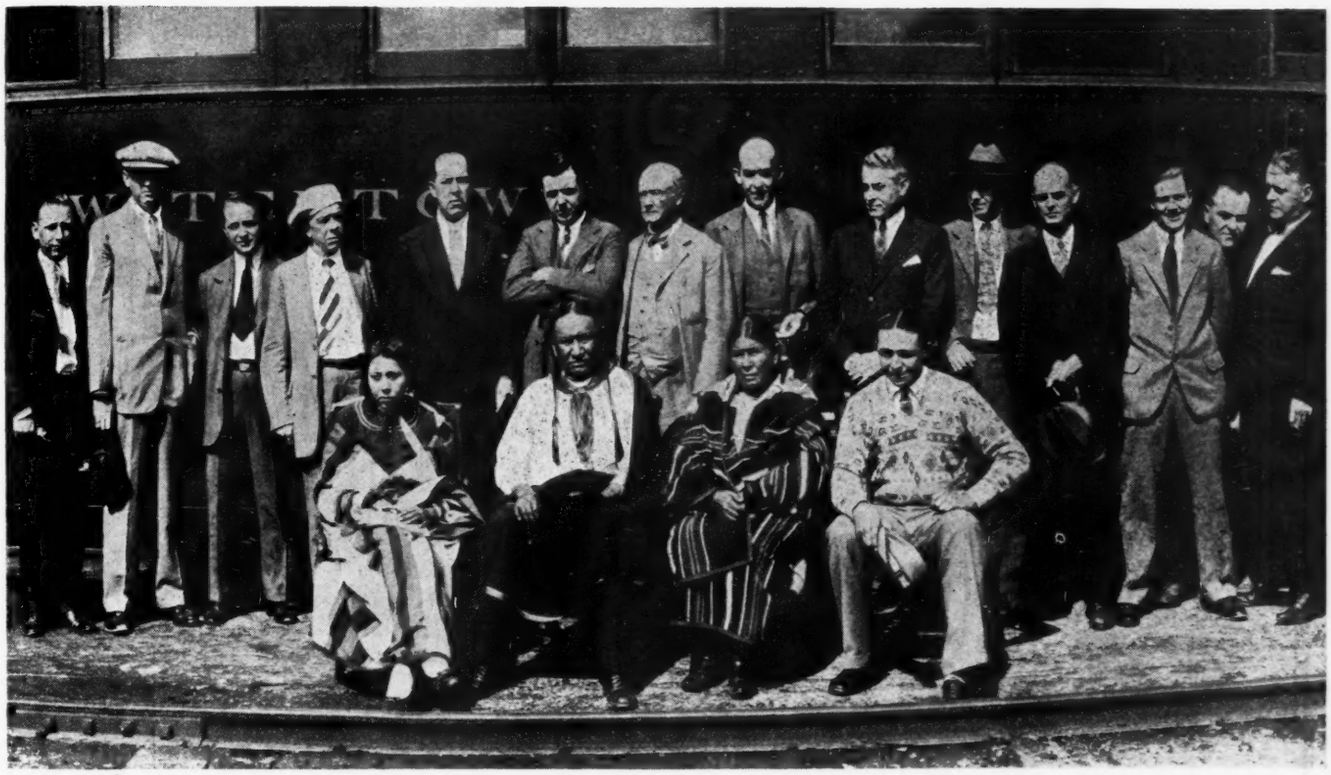
(f) Failure to report tests of all producing sands. It often happens that the gas reported producing from upper sands in course of drilling is not included in final test reports, with no explanation made whether or not the upper sand gas has been exhausted."

MAYFIELD, KY.—Beginning in business in August, 1924, with four men and now employing 20 regularly, is the record of the West Kentucky Oil Co., Inc., which was organized by Orvis Griffin, general manager, and W. T. Vaughan, secretary-treasurer. Other officers are: H. B. McFarling, president and W. S. Avey, vice president.

The company is marketer of Motor Joy gasoline, kerosene and other petroleum products. It is operating plants at Fulton, Arlington and Bardwell, in addition to its Mayfield headquarters, according to Enoch D. Burnett, auditor.

STEELE, MO. — A large road sign west of this city on highway No. 61 has been erected by the Standard Service Co., with headquarters here. The company recently acquired the city agency for tickets for the Gregory Bus line and is serving gasoline and oils to the buses, according to Dr. T. A. Niechen, general manager.

Financial Men Inspect Skelly Properties



Part of the party taken over the Skelley Oil Co. properties by W. G. Skelly, with some Indians in foreground. W. G. Skelly, the host, is standing fifth from the left.

TULSA, Oct. 7

A DINNER at the Mayo hotel here Oct. 1, was a final feature following a week's inspection trip of Skelly Oil Co. properties made by a group of eastern bankers, brokers and financial writers as guests of W. G. Skelly, president of the company. Heads of many of the most important producing and refining companies of the Mid-Continent also were guests of Mr. Skelly at the dinner.

The Skelly guests left New York in a special train on Sept. 24. The train stopped for an inspection of the company's refinery at El Dorado, Kan., was taken down into the Panhandle of Texas and through the Burbank field in Oklahoma.

In the Panhandle the special train was the first commercial train to pass over the rails of the Santa Fe extension from Panhandle, Texas, to the heart of the Hutchinson county field at Borger. Heavy rains made inspection of the Texas fields particularly difficult.

On Sept. 30 the special train stopped at Pawhuska and the visitors attended the auction sale of oil leases in the Osage nation. Following the sale the train was taken to Burbank, returning to Tulsa on Oct. 1.

At the final dinner Glenn Condon, director of public relations for the Skelly company, was master of ceremonies. He called on J. F. Nagle, Skelly branch sales manager; Timothy Walsh, assistant financial editor of the New York World; Frank R. Henderson, president of the New York Rubber Exchange; A. C. Farmer, Tulsa banker and real estate operator; and C. C. Herndon vice president of the Skelly company, for short talks.

At the close of the dinner Mr. Skelly explained the purpose of the trip of inspection. He said that he has thought for a number of years that it would be to the advantage of the entire oil industry if financial writers of the east and brokers handling oil stocks from day to day might view the oil industry as it is and get a clearer idea of its magnitude.

Gasoline Taxes Gain 144% in 7 Years

WASHINGTON, D. C., Oct. 9.—From a total revenue of $1,022,514 from gasoline taxes in 1919, revenue from this source increased to $148,258,097 in 1925, according to the Bureau of Public Roads. In 1919 only four states levied a tax on gasoline and in 1925 all but four states had a tax.

The amount of tax collected in the 44 states and the District of Columbia during 1924 and 1925 was:

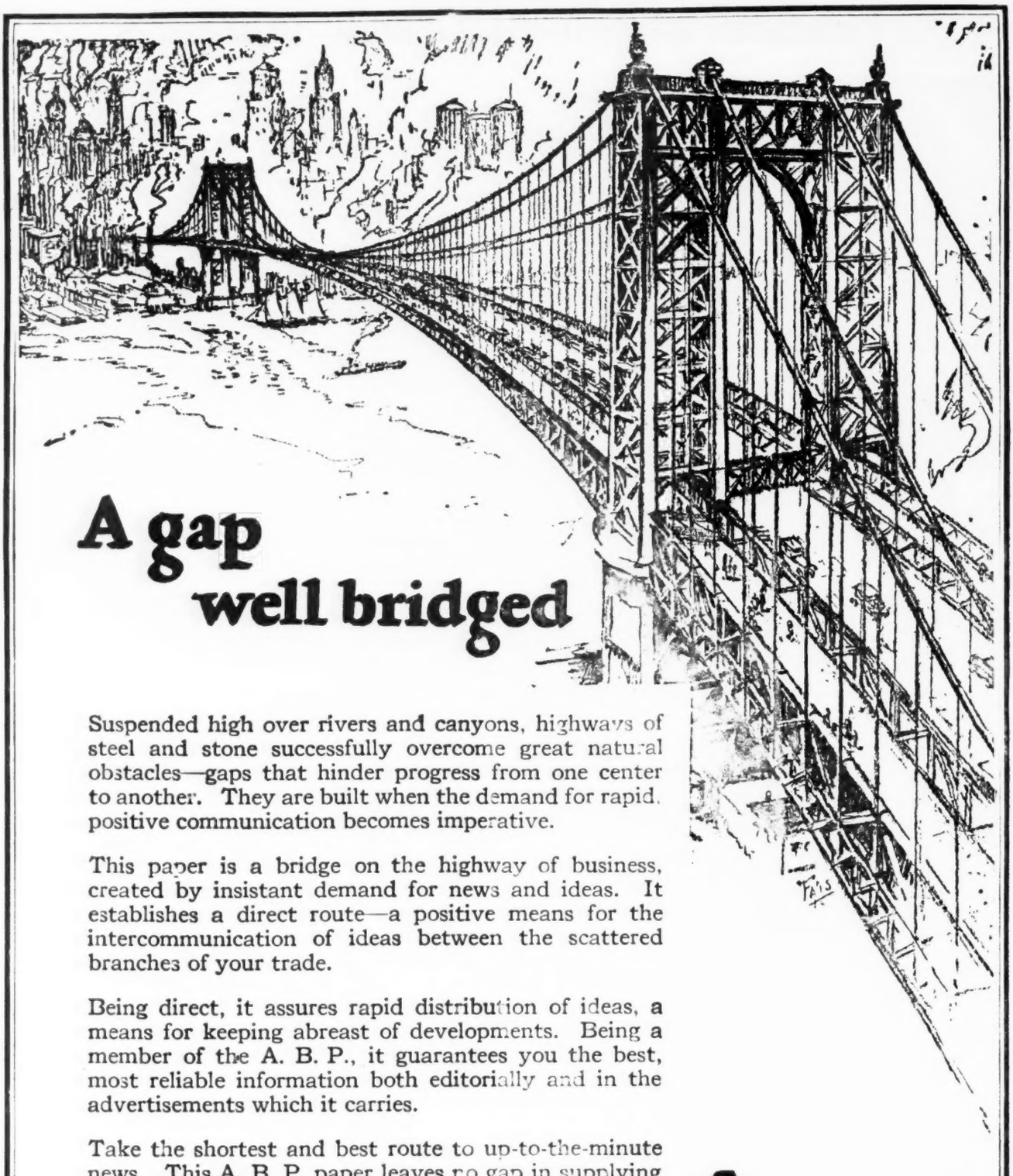
	1924	1925
Alabama	1,738,661	2,140,802
Arizona	730,846	855,951
Arkansas	2,283,491	2,950,360
California	13,413,542	14,956,789
Colorado	1,843,073	1,935,329
Connecticut	1,072,433	1,908,809
Delaware	317,925	349,950
Florida	3,769,867	7,657,713
Georgia	3,563,682	4,418,824
Idaho	545,347	895,443
Illinois	.....	.....
Indiana	4,838,307	7,653,049
Iowa	.....	3,505,115
Kansas	.....	2,905,194
Kentucky	1,840,513	3,041,560
Louisiana	1,455,985	2,339,543
Maine	521,673	1,268,348
Maryland	1,641,994	2,003,632
Massachusetts	.....	.....
Michigan	.....	8,236,078
Minnesota	.....	3,863,940
Mississippi	1,585,058	2,494,274
Missouri	.....	4,159,115
Montana	612,067	† 689,070
Nebraska	.....	2,193,902
Nevada	154,263	318,705
New Hampshire	614,226	707,072
New Jersey	.....	.....
New Mexico	187,099	†† 526,908
New York	.....	.....
North Carolina	4,604,768	6,082,378
North Dakota	504,020	649,416
Ohio	.....	9,009,950
Oklahoma	3,164,701	5,143,517
Oregon	2,570,654	2,909,095
Pennsylvania	‡9,089,540	‡10,501,547
Rhode Island	.....	318,357
South Carolina	2,224,212	3,865,403
South Dakota	1,144,042	1,847,598
Tennessee	1,812,235	3,407,886
Texas	3,776,715	4,641,784
Utah	704,586	†1,063,594
Vermont	232,966	502,272
Virginia	3,197,525	3,701,951
Washington	2,720,875	3,073,654
West Virginia	1,277,102	2,186,759
Wisconsin	.....	4,031,676
Wyoming	202,024	456,297
District of Columbia	485,728	889,598
Total	80,422,295	148,258,087

*Motor oil tax excluded.

†Revised data.

††Dealer's license fees excluded.

‡Delinquent 1 cent taxes of former years excluded in 1923, 1924 and 1925 data, but added to 1922 tax.



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Western Refinery Gasoline Stocks Reduced To Lowest Point in History

By J. C. Chatfield
N. P. N. Staff Writer

TULSA, Oct. 7

STOCKS of gasoline available for shipment at refineries in the Mid-Continent field have been reduced to the lowest point in the history of the field during the heavy consuming season which is just drawing to a close. Present stocks are down to a point which could be reduced but very little. One third of the current stocks at refineries are not available for shipment since they are needed as "working stocks."

A survey of the plants now operating among the 124 refineries from which the National Petroleum News gathers weekly reports indicates that a minimum working stock of gasoline is required at these plants totaling 14,020,100 gallons. On Sept. 17, when the group of plants reported the lowest stocks of the present year, total gasoline inventories were 40,705,503 gallons.

Deducting the minimum working stocks of 14,020,100 gallons it is found that actual stocks available for immediate shipment on Sept. 17, were 26,685,403 gallons. On the basis of gross stocks reported it would appear that the group of 124 plants had eight days' supply at the current rate of shipment. But with working stocks deducted this is reduced to 4.9 days' supply.

In past years there has been much discussion among refiners and others interested in gasoline markets centering on the amount of working stocks needed for plant operation. The term "working stocks" has been rather loosely defined and estimates have varied widely.

What Are Working Stocks?

EVERY refiner must have a number of working tanks for each product. The number of tanks varies with the number of grades produced which must be stored and shipped separately. In each tank there is always some gasoline which cannot be withdrawn for shipment without special methods which are not used ordinarily unless the tank is to be switched to some other service. This material always in the tanks is known as "tank bottoms."

In every plant there is always some gasoline in the pipe lines and treating system. This material is pumped out of the system only when new material replaces it or the system is drained and the plant shut down.

To make the accompanying tabulation of minimum stocks necessary for plant operation the writer asked each refiner to give a report of the amount of gasoline necessary to be kept in the system for plant operation. It was explained that the term "minimum working stocks" was to include only the material in lines, treating systems, tank bottoms and the like which is considered unavailable for shipment.

In a very few instances refiners reported that the stocks they show on hand from week to week exclude material which must be kept in the system and is not available for shipment. A great majority of the refiners, however, reported that their inventories include all finished material in the plant and gave a minimum working stock figure. Some of these were rough estimates but in most cases the reports included only the cubic contents in gallons of various pipe lines, treaters and tank bottoms.

The check shows minimum working stocks at the 23 Kansas plants to be 3,644,200 gallons. For the week ending Sept. 17 these plants reported a total reserve of 8,679,611 gallons. Actually these refiners had on hand only 5,035,411 gallons which they could offer out for immediate shipment.

Less Than Four Days' Supply

DURING the week ending Sept. 17, the Kansas plants shipped 8,975,362 gallons of gasoline to consumers, an average of 1,282,000 gallons per day. On the face of the report Kansas refiners would appear to have on hand a full week's supply of gasoline. But with minimum working stocks deducted it is found that the reserves represent only 3.92 days' supply, a margin which would be considered almost too low for safety in most industries, even at the tag end of the season.

At the 46 Oklahoma plants covered by the survey minimum working stocks were found to total 5,762,700 gallons with total stocks on Sept. 17 amounting to 20,192,352 gallons. The Oklahoma group thus had available for immediate shipment on that date 14,429,652 gallons. At the rate of shipment maintained during the week of 2,287,000 gallons per day stocks of gasoline available for shipment thus represented 6.31 days' supply.

In north and central Texas the 41 plants covered reported 3,795,800 gallons as minimum working stocks and total reserves of 10,054,159 gallons on Sept. 17. Gasoline available for shipment on that date was 6,258,359 gallons representing 4.7 days' supply.

The 14 plants in north Louisiana and Arkansas showed minimum stocks of 817,400 gallons with an actual current reserve of 1,779,381 gallons, leaving available for shipment only 961,981 gallons. This amount could be shipped out easily in four train loads from that field. Total shipments for the week ending Sept. 17, were 3,465,133 gallons, indicating that there is available for shipment from the plants mentioned only two days' supply.

Minimum Stocks

FOR the field as a whole the 124 plants showed minimum working stocks of 14,020,100 gallons and actual total stocks of 40,705,503 gallons on Sept. 17. Gasoline available for shipment on that date was thus only 26,685,-

Table No. 1

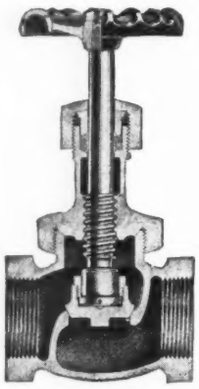
Percentages Relationship of Crude Runs, Gasoline Production, Shipments and Stocks at 124 Mid-Continent Refineries as Reported by National Petroleum News as Compared with Monthly Reports of the U. S. Bureau of Mines-

1925	Crude Runs	Gasoline Production	Gasoline Shipments	Gasoline Stocks
June	65.02	60.58	59.43	36.04
July	69.01	60.57	55.99	40.43
August	66.77	60.10	59.49	41.01
September	64.31	58.88	58.75	38.97
October	63.21	58.11	55.75	42.53
November	61.18	56.60	57.41	41.28
December	64.30	59.83	60.11	43.58
7 Mo. Average	64.81	59.22	58.13	40.55
1926				
January	64.56	60.36	59.91	46.98
February	62.79	59.92	59.86	48.21
March	63.18	60.78	63.52	45.64
April	63.84	59.54	61.42	43.01
May	64.77	60.74	60.99	41.13
June	66 47	63 12	63 38	39 56
July	63.58	61.11	61.27	34.69
7 Mo. Average	64.17	60.79	61.47	42.74

Table No. 2

Gasoline Stocks on Hand June 30, in Terms of Days Supply.

	Mid-Continent	All Others	Total U. S.
1923	64	75	73
1924	51	88	80
1925	26	75	62
1926	23	63	54



Sectional view, Fig. 750, screwed, Jenkins Bronze "Marine" Globe Valve.

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403 gallons. Shipments for the previous week had been 37,766,709 gallons. At that rate of movement of finished gasoline the available reserves at 124 plants representing 60 per cent of the operating capacity in the field were only 4.94 days' supply. On the basis of gross figures reported before deduction of minimum working stocks it would appear that stocks represented a full week's supply.

In the group of plants under review there are actually operating at present or with some stocks of gasoline on hand and considered as active, 86 plants with a capacity of 402,600 barrels per day. Current runs are just below 300,000 barrels per day. On the basis of active plants it appears that minimum working stocks of 14,020,100 gallons would be an average of 34,823 gallons of gasoline per 1000 barrels of crude capacity.

Louisiana-Arkansas

REFINERIES in north Louisiana and Arkansas usually operate with smaller stocks than any other group in the Mid-Continent. Gasoline yields from crude in that area are much less than in other states. Most plants in that area produce only one or two grades of gasoline and the plants are operated with minimum working stocks of 15,599 gallons of gasoline per 1000 barrels of capacity. One additional reason for the low minimum in that area is the fact that this group of plants operates up to or above their rated crude capacity on a clean-up basis most of the time. Active capacity of the north Louisiana and Arkansas group is 2,400 barrels of crude per day.

There is very little difference between the Oklahoma minimum working stocks and those of north and central Texas on a crude capacity basis. Oklahoma has 30 active plants in the list with a capacity of 156,200 barrels per day and a minimum stock required of 5,762,700 gallons or 36,893 gallons per 1000 barrels. Texas plants with 108,000 barrels of active capacity require 3,795,800 gallons or 35,146 gallons per thousand barrels of capacity.

The 15 active plants in Kansas with a capacity of 86,000 barrels of crude per day require a minimum stock of 3,644,200 gallons of gasoline. This averages 42,374 gallons per thousand barrels, approximately 5500 gallons per thousand more than Oklahoma.

Kerosene Stocks

MINIMUM working stocks of kerosene at the same group of plants, of course, is much less than in the case of gasoline. Production is lower throughout the field and there are fewer grades offered for sale than in the case of gasoline. Totals from the survey were 2,801,917 gallons with actual reserves on hand on Sept. 17, 9,067,729 gallons.

Kansas refiners with the largest proportionate production of kerosene require 889,200 gallons minimum working

stocks compared with actual stocks of 2,420, 885 gallons. The minimum represents 10,339 gallons per 1000 barrels of capacity.

North and central Texas plants are next in line with minimum stocks of 945,850 compared with actual current stocks of 2,353,503 gallons. Minimum stocks in that area are 8,757 gallons per 1000 barrels of active capacity.

Oklahoma plants with current stocks of 3,868,753 gallons of kerosene reported a minimum requirement of 805,167 gallons or 5,154 gallons per 1000 barrels of operating capacity and Louisiana and Arkansas plants with the smallest production of kerosene and only 424,588 gallons on hand Sept. 17, reported minimum requirements of 161,700 gallons or 3,085 gallons per 1000 barrels of operating capacity.

In the case of kerosene at all plants on Sept. 17 there was an available stock of 6,265,812 gallons representing 7.7 day's supply at the current rate of shipment. Detailed figures on both gasoline and kerosene are given in Table No. 1.

Tennessee Jobbers Elect New Officers

MURFREESMORO, TENN., Oct. 8.—At a recent meeting of the Tennessee Independent Oil Men's Association, at Nashville, the following officers were elected:

R. M. Prichard, Home Oil Co., Ripley, Tenn., president; E. Johnson, Columbia Oil Co., Columbia, vice president; and G. H. Alsup, Jr., Consumers Supply Co., Murfreesboro, secretary and treasurer.

Directors elected to fill unexpired terms are: B. F. Diggs, Paris Oil Co., Paris, Tenn.; John Lowe, Cassety Oil & Grease Co., Nashville; Mark Senter, Southeastern Oil Co., Chattanooga; Sanford Garner, Sanford Garner Oil Co., Covington, Tenn.; F. P. Kendall, Kendall Oil Co., Memphis; and H. A. Thompson, Thompson Oil Co., Nashville.

The meeting was held at the Andrew Jackson Hotel.

New Oil Jobber in Philadelphia

PHILADELPHIA, Oct. 9.—A copartnership which will operate under the name of Bennett-Dexter Oil Co., has been formed by Frank O. Bennett and C. Joseph Dexter, of Philadelphia. Headquarters will be in the Widener Bldg.

The company will sell gasoline, kerosene, furnace and lube oils, and other petroleum products to Independent jobbers. For the past four years Mr. Bennett was formerly with the Union Petroleum Co., has acted as broker in cargo transactions and this work will be carried on by the new company.

Mr. Bennett is general manager.

CORTLAND, N. Y.—Spot Oil Co., Inc., has just completed a combination warehouse and garage here, which is equipped with two ..rain racks.

MATHIESON Chemicals

Mathieson Traffic Service

THE complicated industrial structure of today has made transportation one of the foremost problems with which industry has to contend. Expert traffic counsel has become essential to the prompt and efficient handling of freight movements.

In the chemical-consuming industries in particular, where highly technical materials are dealt with, the traffic expert is indispensable. Yet comparatively few consumers would be justified in maintaining a traffic department of their own in order to keep fully informed on traffic matters.

It is for this reason that the Mathieson organization includes a full staff of traffic experts for the service of all customers. Questions of freight rates, routings, tracing and expediting of shipments, claims against carriers, etc., are all handled for Mathieson customers by our well organized Traffic Department. Our staff welcomes the opportunity of assisting customers with their traffic problems and is on the alert at all times for traffic changes which might affect their interests, whether or not such changes have any direct connection with Mathieson products.

Consumers should give careful consideration to the advantages of Mathieson traffic service before seeking a source of supply elsewhere.

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Synthesis of Petroleum at Ordinary Pressure from Coal Products

By Franz Fischer and Hans Tropsch

Translated by W. P. Cutter, Director Information Department Arthur D. Little, Inc., from Brennstoffchemie, 7:97, April 1, 1926

PART I

THE problem of changing coal into oil*, often somewhat misleadingly referred to as the liquefaction of coal, has become increasingly important to chemistry, the coal industry, and especially to the chemical investigation of coal, during the past decade.

The different kinds of so-called dry distillation, especially low temperature distillation, as well as the high-temperature distillation carried on in gasworks and coke plants, can be regarded as only a partial solution of the question. Both these processes can be characterized by their owing the origin of the oil produced to the decomposition of certain parts of the coal substance, especially the bitumen; for this reason, especially in low-temperature distillation, they have been applied especially to the geologically younger coals, rich in bitumen.

In addition to the tar, there is obtained in coal distillation, gas, half-coke and coke, which are most important products. The production of tar and oil by either of these processes cannot be increased, because, especially where coal is abundant, there is a limit to the possibility of the sale of the coke or half-coke. Accordingly further advance in the coking process depends on the manufacture of a usable half-coke, for example, from coal dust; this awaits the construction of a suitable furnace, after the chemical basis of low-temperature coking has been fully cleared up.

The process which changes not only the bitumen but the main substance of the coal into oily products is the hydrogenation of coal by hydrogen at high pressure, as developed by Bergius and Billwiller. By using hydrogen under 100 atmospheres pressure and at a temperature of 400-500 C., not all kinds of coal, but those geologically young and not suited for use in coking, are changed to the extent of half their weight into oily products. These consist of hydrocarbons and oxygen-containing products, such as phenols, having various boiling points. An important advantage of the process is that it requires no special catalyst; the sulfur present does not interfere with the process. On the other hand, the products are naturally not sulfur-free, but must be submitted to further refining. During the past ten years the necessary apparatus for the Bergius process has been perfected and it is at present in its final phase.

Building of Oily Substance

WHILE the high-pressure hydrogenation of coals by the Bergius and Billwiller process must be regarded as a building-up of oil-like substances from the large complex molecules present in the coal, we have developed during the past few years synthetic methods for oils, starting from the products of gasification of the carbon. These synthetic methods also required high pressures of over 100 atmospheres, but are, in contradistinction to the Bergius process, decidedly catalytic processes, which require a preliminary purification of the gases, on account of the catalyst, but yield as a result sulfur-free products.

Our investigation on Synthol**, that is, the oily mixture of synthetic alcohols and ketones which results from catalytic combination of hydrogen and carbon monoxide, was reported in this journal during the past three years. We may assume that these investigations, and the literature relating to them, are well known.†

Disregarding the ordinary methods of coal distillation, the problem of changing coal into oil, either by direct hydrogenation or by catalytic action on gases, has been attempted in the past by the use of high pressures. In the part which we have taken in these investigations, we have never doubted that the use of high pressures was safely possible, but nevertheless, for work on a wider scale, as in the coal industry, this method introduces serious difficulties.

The following work shows that it is possible to produce by synthesis and without the use of pressure, products similar to those obtained from petroleum, from benzine to the solid paraffin, from the products of the gasification of any kind of coal or coke.

Sabatier-Senderens Work

THE work of Sabatier and Senderens, 24 years ago, showed that the catalytic reduction of carbon monoxide at ordinary pressures resulted in the exclusive production of methane. No higher homologues of methane were found. By the use of a catalyst containing iron-zinc oxide we found that at ordinary pressures not only methane was formed, but a mixture of methane with higher homologues. A systematic investigation of the different catalysts showed that the ability to form methane homologues was by no means confined to the catalyst above mentioned. A series of catalysts were found, which were still more active than the iron-zinc contact substance.

For instance, a mixture of cobalt and chromium oxide as catalyst gave at a temperature of 270° not only gaseous homologues of methane, but even liquid and solid ones.

A quantitative examination of the reaction revealed an explanation of the mechanism of the reaction. We discovered that at first carbon was removed from the carbon monoxide by the catalyst, evidently with the formation of carbide. This carbide, present in very finely divided condition, was decomposed by the hydrogen present in the gaseous mixture, the metal was regenerated, but the carbon was carried on as hydrocarbon. According to all appearances this carbide behaved very differently from normal carbides, which are proof against high temperatures, and rather as carbides rich in carbon, which exist at relatively low temperatures.

It thus happens that the carbon is not given off in the form of methane, through the action of the hydrogen, but in the form of higher homologues. The correctness of the conception, that under our conditions the synthesis of the hydrocarbons did not result in formaldehyde or methyl alcohol, was further confirmed by our establishing the fact that hydrocarbons are always the result, and never compounds containing oxygen, which was contrary to the observations with high-pressure catalysis.

In the direct synthesis of hydrocarbons by catalysis at ordinary pres-

*Franz Fischer. The Conversion of Coals into Oils. 1925.

NOTE: The investigations reported under I and II were carried on during the year 1925. Corresponding patent applications followed.

**Fischer and Tropsch. Brennstoffchemie, 4:276 (1923); 5:201 (1924); Berichte d.d. Chem. Gesellschaft, 56:2428 (1923).

†Pertinent publications of later dates are: Patart, Chimie et Industrie, 13:179 (1925); Audibert, Chimie et Industrie, 13:186 (1925); Mittasch, Berichte d.d. Chem. Gesellschaft, 59:13 (1926).

sure, we have to do with a wholly different reaction from that in high-pressure catalysis, which requires not only high pressure, but high temperature as well. If we operate at ordinary pressure with our catalysts at as high a temperature as is required in high-pressure catalysis, we obtain only methane instead of the homologues of methane. According to the usual physico-chemical ideas, one may properly expect that our reaction would go better at high temperatures, since it will take place with fewer molecules, and such reactions are promoted by heat. One fact must not be left unconsidered. The higher boiling point of the methane homologues and the adsorptive action of the catalyser favor the retention of the product of the reaction on the catalyst. By the use of high pressure this tendency is increased and prevents obtaining the products formed in their original condition. If higher temperatures are used, the formation of carbides rich in carbon is prevented, and methane only is formed, which we have obtained by the use of higher temperatures even at ordinary pressures.

Can Be Done on Large Scale

THAT our reaction can be carried on on a considerable scale is shown by the result of an experiment which we have carried on with water gas. No exact proportions of carbon monoxide and hydrogen are required. We obtained from each cubic meter of water gas by passing several times over a catalyst, obtained by the reduction of a mixture of cobalt and iron oxides, about 100 gms of liquid and partly solid hydrocarbons. The liquid hydrocarbons were predominately benzine-like in character. We have already prepared several hundred grams. The formation of methane can be almost completely prevented. The oxygen of the carbon monoxide is found in the form of water and carbonic acid in the products of the reaction.

The carbon monoxide reduction seems to have a similar meaning for technology that the reduction of carbon dioxide has in nature. The reason why the technical catalytic reaction is not applied to carbon dioxide is because the carbon monoxide, which has less oxygen, is so easily obtained. To the well-known reduction of carbon monoxide at ordinary pressure to methane, we have added the catalytic formation of hydrocarbons at ordinary pressure. In addition, there is, in the line of high-pressure catalysis, the synthesis of methyl alcohol, and the synthesis of its higher homologues, the so-called Synthol. The catalyst determines in the two latter cases whether the one or the other product results; so that now according to our new observations four products are producible from carbon monoxide and hydrogen, namely: 1 Methyl alcohol; 2 its homologues, Synthol; 3 Methane; and 4 its homologues, the hydrocarbons. A new possibility of the formation of the natural petroleums from inorganic material is indicated.

II.

We have, in our first communication above, proved that our reaction works on a considerable scale, and have briefly described an experiment in which water gas, with the assistance of an iron and cobalt oxide catalyst has yielded the benzine hydrocarbons. We may in this our second communication communicate something further on carrying out the process and on the theory involved.

1. Catalysts

AS stated in our first communication, we were convinced that carbides rich in carbon must stand in close relation to the process, and that most probably the hydrocarbons result from the action of hydrogen on these. We have not attempted to investigate this by first making the carbide and then treating it with hydrogen. We have convinced ourselves that by such a method at first a small amount of oil like petroleum would result, but that in the gaseous phase only methane of the hydrocarbons would be present, and none of the wanted benzine. On the other hand, the experiments have shown us that when the process is carried on catalytically, that is, when the carbon monoxide and hydrogen are led over the contact body at the same time, the reaction products will show benzine vapor and little methane, and that also proportionately little oil of a petroleum character is separated.

We have found that metals of the eighth group in finely divided form are efficacious for our process. From the three metals coming into consideration on practical grounds, the iron group, especially iron, obtained from finely divided oxide by reduction with hydrogen at 350-500°C, and mixed with more or less oxide, was most satisfactory. This catalyst is, however, very inert, and the products obtained with it very small in amount. Finely divided cobalt works better, combining the properties of the iron with the ability to act at much lower temperatures. Nickel has the ability to produce higher homologues from methane, but much weakened. Only by special precautions can the homologues be obtained by its use.

Although the metals in finely divided form are quite suited for use as catalysts, it has proven desirable to provide some additions of other material which assure higher dispersion of the catalyser in the metallic condition, and prevent reduction of the active surface by surface friction. These additions have a partial specific action, as on the one hand they accelerate the formation of carbide, and on the other hand tend to change the composition of the gas according to the reaction: $CO + H_2O = CO_2 + H_2$. At least it is possible within certain limits to transform the oxygen of the carbon monoxide either into carbon dioxide or into water.

For example, we have used in combination with the metals above named: chromium oxide; zinc oxide; beryllium oxide; rare earths; uranium oxide; silicic acid; aluminum oxide; magnesium oxide; manganese oxide; also activated carbon and amorphous carbon in another form. The oxides mentioned at the beginning of this list have proved especially applicable, but combinations with palladium, copper and iron oxide (the latter with nickel and cobalt) have shown advantages. Treatment with weak alkali gives a stronger action of catalysis to the iron metals. As for the amount of the additions of oxides, we have found that mixtures having a proportion of metal to oxides of 1:1, to 1:3 are favorable. When there is an excess of oxide, the catalytic effect generally decreases.

The catalysts have been made in various ways, as by mixing the special oxide or by mixing the dissolved or melted salt—nitrate or organic salt—and transformation of the mixture into oxide, either by ignition or by precipitation with alkaline carbonates; also by melting together the salts with the oxides. To give form the oxide or oxide mixtures have been pressed and then granulated, or we have formed in a starch mixture on a wire-cutting press; or they have been brought onto carriers, such as pieces of porcelain, asbestos, pumice, or activated charcoal. In every case the absence of the poison sulfur is important.

2. Composition of Gases Used

THE first experiments were made with pure hydrogen and carbon monoxide made from formic acid. Soon, after a suitable gas-purification apparatus had been worked out, we came to the use of technical gases, especially water-gas. For the gas purification, we established the requirement that all the sulfur compounds present in the gas should be catalytically changed into hydrogen sulfide, which could be removed by known methods. The purification should not change the composition of the gases used. We have found such a gas purification process, and will report on it later.

For the majority of the investigations water-gas was used, about an equal mixture of carbon monoxide and hydrogen. We have also tried gases poorer and richer in carbon monoxide, and in addition, carbon monoxide and water vapor, and gas mixtures which represented technical generator gas and coke oven gas. We need only say that benzine was obtained from all these gases, as soon as they were completely purified.

3. Reaction Temperature

A far-reaching decrease in the reaction temperature is especially important. With iron catalyst, this may be lowered to 300°C. Below this, the prod-

(Continued on page 99)

(Continued from page 96)

uct is too small. With cobalt, the temperature may be lowered to 250°, but 270° has proved desirable for a satisfactory yield. The temperature must be even lower with nickel; this, with suitable extending additions, is still active at 160°; but as an active methane catalyser, it gives considerable methane, and so consumes the gas in a direction not wanted in benzine manufacture.

If one attempts, with these three metals either in pure form or in mixture with the oxides mentioned above, to increase the speed of the reaction by increasing the temperature, the homologues of methane disappear and in their place only methane is produced. This is quite evident, as the following experiment shows. We allowed some pentane to vaporize in hydrogen, and led this mixture over a cobalt catalyst at 270°, the temperature for benzine formation. A part of the pentane disappeared and in its place appeared methane. It is seen that at higher temperatures the homologues of methane would either not appear or would be transformed into methane.

4. Velocity of Gas Flow

WE have tried the most variable speeds of gas flow. As a result, we can say, that the greater the velocity of the flow, the more the formation of methane is prevented. Since the using up of the gas is undesirable, a compromise from the optimum gas velocity is best. It will be lower when an attempt is made to obtain the maximum amount of benzine from a given amount of gas in one operation or to produce the largest possible hourly yield with the maximum gas consumption.

5. Recovery of the Hydrocarbons

Part of the hydrocarbons formed separate themselves in liquid form as soon as the exit gases have sufficiently cooled. The larger proportion remain in the form of benzine vapor in the gas, and may be recovered by known means, such as adsorption, absorption, compression and cooling. We have used cooling as well as adsorption in activated charcoal.

6. Composition of Hydrocarbons Produced

The higher boiling oils which separate themselves are according to conditions light oils of the character of light petroleum, occasionally, however, heavier oils from which solid paraffin crystallizes out. The benzine obtained from the gas is water white, clear, and has a pleasant odor, like the Pennsylvania benzine. It contains only a few percent of substances which react with concentrated sulfuric acid, and is wholly unchanged on keeping. The raw product recovered from activated charcoal has a specific gravity of 0.68 at 13°C. That it is free from sulfur compounds, is shown by its mild, agreeable odor. This is easily understood, as it is prepared from gases freed from all sulfur compounds. The formation of high-boiling vaseline-like products can be proved by extraction for a long time with ether; after the evaporation of the solvent, a salve-like residue remains.

By our process, in addition to the hydrocarbons, only water and carbonic acid are formed. We have examined the water; it contains no acid, nor have we found any other oxygenated organic compound.

7. Analysis of the Reaction-Gases

In order to be able to calculate the amount of the benzine finally obtained, during the experiments samples of the gas were taken and analysed according to the ordinary methods of gas analysis. especial attention being paid to the average composition of the hydrocarbons. It was shown that in our case the constituents absorbed by fuming sulfuric acid consisted of higher parffin hydrocarbons. That these dissolve in fuming sulfuric acid, is well-known. From the difference in the amount of the entrance and exit gases, the contraction in volume, combined with the results of the gas analysis, the amount of the homologues of methane could be indirectly calculated. In order to determine how these were divided with respect to boiling points, that is, how much was benzine and how much boiled at a lower figure (Gasoil††), we have used the condensation-analysis, carried out in a way previously described.†††

††National Gasoline.

†††Tropsch & Dittrich. Grennstoffchemie, 6:169 (1925).

NIAGARA FALLS, N. Y.—A new service station was opened here on Sept. 24 by the Wolfe Tire Service, Inc. Sinclair gasoline and oils are being handled and lubrication service is given. Tire service is also given and Firestone tires are handled. A high pressure washing system has been installed.

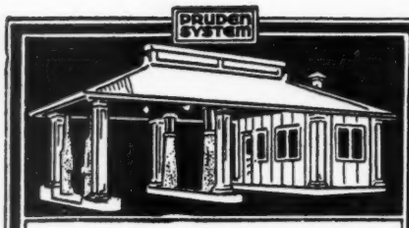
JOHNSON CITY, TENN.—G. H. Seawell, who has been district manager at Omaha, Neb. and Minneapolis, Minn. for The Texas Co., has now embarked on his own oil business career. He opened a new $10,000 filling station here the latter part of September and is handling products of the Sinclair Refining Co.

Gulf Coastal Water Shipments, July Compared with June

(All figures in barrels of 42 gallons)

Company—Port	Coastwise Refined June	Coastwise Refined July	Export Refined June	Export Refined July
Standard of Louisiana Baton Rouge	923,480.00	889,696.00	1,038,803.00	540,378.00
The Texas Company Port Arthur	1,195,580.00	1,252,518.00	247 831.00	351,974.00
Gulf Refining Co. Port Arthur	2,231,514.18	2,432,704.36	235,658.90	106,475.60
Magnolia Petroleum Co. Beaumont	1,361,906.88	1,066,754.42x	.....	.....
Sinclair Refining Co. Houston	513,909.71	228,279.90	.....	.....
Humble Oil & Refining Co. Baytown	873,869.71	705,482.93	772,277.23	681,336.00
Marland Oil Co. Texas City	.....	.....	.....	53,212.83
Atlantic Oil Producing Co. Atreco	105,128.40	201,261.50	.....	.....
Galena Signal Oil Co. Houston	110 000.00	228 000.00	56 000.00	50,000.00
Deepwater Oil Refineries Houston	.....	NONE	42,000.00	NONE
Keen & Woolf Oil Co. Houston	.....	50,000.00	.....	.....
Totals	7,315,388.88	7,054,697.11	2,392,570.13	1,783,376.43
	Coastwise Crude		**Export Crude**	
Standard of Louisiana Baton Rouge	1,902,967.00	2,052,306.00	.....	.....
The Texas Company Port Arthur	37,638.00	18,045.00	.....	.....
Gulf Refining Co. Port Arthur	224,770.33	NONE	.....	.....
Magnolia Petroleum Co. Beaumont	458,829.63	570,045.65x	.....	.....
Sinclair Refining Co. Houston	291,270.60	427,237.79	9,226.00	.....
Humble Oil & Refining Co. Texas City	1,059,087.00	638,754.00	.....	.....
Neches Terminal	105,565.00	90,240.00	.....	.....
Baytown	1,134,265.00	644,687.00	53,996.00	.....
Marland Oil Co. Texas City	354,901.66	633,636.22	.....	.....
Atlantic Oil Producing Co. Port Arthur	37,767.44	18,044.87	.....	.....
Atreco	564,823.41	404,340.68	.....	.....
Smiths Bluff	63,603.58	54,288.66	.....	.....
Vacuum Oil Co. Texas City	295,907.00	.....	.....	.....
Swiftsure Petroleum Co. Texas City	191,540.00	210,210.00	.....	.....
Crown Central Pet. Co. Houston	104,803.00	289,905.03	.....	.....
Totals	6,927,738.74	6,051,740.90	63,222.00	.....

x—Magnolia makes no distinction in reports between coastwise and export shipments.



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Here & There

National Petroleum News

C. W. Cahoon, president of the Carson Petroleum Co., Chicago, who has been enjoying several weeks' vacation in Colorado and on the Pacific coast, accompanied by Mrs. Cahoon, has also been visiting company offices at Wichita Falls, and Tulsa. Previous to his return to Chicago, Mr. Cahoon will inspect the company's export terminal at New Orleans.

* * *

"Vic" Henderson of the Midwest Oil Co., and "Billy" Howell, of the Marland Oil Co., attended the joint meeting of petroleum geologists and engineers recently at Denver, according to Ernest A. Hanson, associate petroleum engineer of the U. S. Geological Survey at Shelby, Mont.

* * *

C. L. Swim, who has had charge of insurance matters under the direction of C. C. Deardorff, tax and claim agent, for the Skelly Oil Co., Tulsa, has been appointed head of the newly-created insurance department. Because of the growth of the insurance work, it has been separated from Mr. Deardorff's other activities.

* * *

R. V. Sonn and Edward Haasl have been promoted to managers of service stations for the Wadhams Oil Co., Milwaukee, Wis. Mr. Sonn was made manager of the 8th and Main St. station at Fond du Lac, Wis., while Mr. Haase became manager of the Stevens Point station.

* * *

Joseph M. Shields, manager of the Irwin Gas & Oil Co., Lincoln highway, Irwin, Pa., was among the 100,000 who attended the Dempsey-Tunney fight in Philadelphia. Mr. Shields also visited friends in that city and in New York.

* * *

William H. Staebner has joined the information department of Arthur D. Little, Inc., chemists, engineers and managers of Cambridge, Mass., where he will have charge of the company's petroleum library.

* * *

H. R. Gallagher, vice president of the Shell Company of California, headquarters at San Francisco, is back at his desk after spending his vacation at Toronto, Canada.

* * *

M. E. Blinks, lubricating engineer at Altoona, Pa. for the Sinclair Refining Co., Chicago, is convalescing after a long illness at the Gill hospital at Steubenville, O.

* * *

R. P. Humes, Tulsa representative of the Republic Oil Co., recently spent a few days in the home office at Pittsburgh.

M. L. Freese, vice president of the Altitude Petroleum Co., Tulsa, left during the week of September 20 for Amarillo, Tex., to inaugurate shipments from the company's new refinery connection, the Amarillo Products & Refiners Corp., whose first plant at Borger, in the Texas Panhandle field, begins operation Oct. 1.

* * *

A. B. James, proprietor of A. B. James Service Stations, Belvidere, Ill., who has just sold out his business and equipment to the Sinclair Refining Co., will take a six weeks' vacation during which time he expects to improve his golf score at Hot Springs, Ark. He will reenter the oil business after his vacation.

* * *

A. C. Carr, assistant manager of the eastern district for the Sinclair Refining Co., New York, has moved his headquarters and staff from New York to Harrisburg, Pa., which has been done to obtain a more central location.

* * *

Mark Finston, vice president of the Bell Oil & Gas Co., Tulsa, recently spent two weeks at the company's office in the Texas Panhandle, making arrangements for the construction of its pipe line system.

* * *

Col. Frank R. Kinney, president of the Marland Oil Company of California, headquarters at San Francisco, was in the east about two weeks in September.

* * *

Roy J. Auers, representative at Wichita Falls, Tex. for the T. B. Noble Co., has just returned from Colorado where he and his family spent the summer.

* * *

Stanley Smith, of the Empire Petroleum Co., Toledo, O., has been promoted to manager of its new bulk station at Ridgway, O., which opened Oct 1.

* * *

E. J. Grace, who was formerly agent at Mattoon, Ill. for The Texas Co., Houston, has been appointed traveling salesman, with headquarters at Decatur, Ill.

* * *

Roy B. Jones, president of the Panhandle Refining Co., Wichita Falls, Tex., has just returned from a six weeks' vacation in California.

* * *

Jesse Finston, secretary-treasurer of the Altitude Petroleum Co., Tulsa, attended the four states jobbers meeting at Kansas City, Mo., on Sept. 28.

* * *

H. A. Sample, vice president and manager of the Hughes Oil Co., Glendive, Mont., is seeking election to the state legislature.

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With "Meas-ur-chek", we provide a complete auditing plan for gasoline receipts and sales—a short-cut to absolute accuracy, and the one way to make sales figures tally with tank car receipts.

Get the facts; they tell how a "Meas-ur-chek" installation pays for itself. Address Dept. 77

Observe how this "Chek" gives you a way to feature your own brand of gasoline.

GASOLINE REGISTER COMPANY
4619 Ravenswood Avenue
CHICAGO

"Meas-ur-chek" will be at Atlantic City. See it there.

Ready to Serve!

Cafeterias, with food cooked and ready, are cutting heavily into the profits of the old-fashioned slow meal restaurants, it is said, because nowadays people must have fast service.

Fast service is a success factor in the filling station too. And Rhodes Visible Dispensers, the first step away from the old cup and funnel, still lead as the fastest means of serving motor oil, These convenient glass containers are prefilled and instantly ready. Replenishing a crankcase is a matter af seconds.

Neatly displayed near the gas pumps, Rhodes Dispensers sell more oil by constantly suggesting the rapid service that today is so much in demand.

JAY B·RHODES Co.
KALAMAZOO, MICHIGAN.

Some of the chapter headings of OIL AND GAS PRODUCTION by Johnson and Huntley, are:

Varieties of Oil and Gas
Pressure in Oil and Gas Reservoirs
Locating Oil and Gas Wells
Oil and Gas Well Drilling
Valuation of Oil and Gas Properties

Messrs. Johnson and Huntley are authorities on the subject of production. Their book sells for $4.50. Let us take care of your order.

National Petroleum News
801 Caxton Bldg. Cleveland, Ohio

Richfield Oil Sells Large Bond Issue Privately

CLEVELAND, Oct. 2.—Richfield Oil Co. of California has sold privately $12,000,000 of 6 per cent first mortgage collateral trust gold bonds at 99 and accrued interest. The price permits a yield of 6.1 per cent. The issue was handled by Bond & Goodwin & Tucker, Inc., Hemphill, Noyes & Co., and Aronson & Co.

This Richfield company was recently chartered in Delaware to acquire the Richfield Oil Co. and United Oil Co., California producers, refiners and marketers.

In the statement of J. A. Talbot, president of Richfield, to the bankers assets and leases of the Richfield Co. are placed at more than $35,000,000. Net profits after all charges of the properties taken into the new company have been $504,779 in 1922; $718,610 in 1923; $1,250,821 in 1924; $1,771,984 in 1925, and $2,530,003 in the first seven months of 1925.

The bonds are convertible into common stock at the option of the holder on the following basis for each $1,000 par value bond: 29 shares from Sept. 15, 1927, to Sept. 14, 1928; 25 shares the following year; 22 shares the next year and 20 shares from Sept. 15, 1930, until maturity on Sept. 15, 1941.

The Richfield has just purchased the McKeon Oil Co. and McKeon Drilling Co. which has settled production said to amount to 2700 barrels a day from 25 wells in the Long Beach, Huntington Beach and Rosecrans oil fields. Undeveloped acreage was not involved.

Imperial Gets Rights to Ethyl Gasoline

TORONTO, ONT., Oct. 2.—Imperial Oil, Ltd. is the exclusive marketer of ethyl gasoline in Canada and the company is marketing it under the name of Imperial ethyl gasoline. It was placed on the market on Sept. 13 and the fact was heralded in full-page newspaper advertising. This gasoline is colored red to distinguish it from other gasolines.

Jobber Opens Syracuse Office

BUFFALO, N. Y.—A branch office has been opened by Oil Jobbers Corp., with headquarters here, at 406 Chamber of Commerce Bldg., Syracuse, according to T. W. VanArsdale, sales manager.

C. E. Brown, who is manager for central New York district, will have charge of the Syracuse office.

ELIZABETH, N. J.—Sure Service Filling Stations, Inc., which began business less than a year ago with two service stations, has built five modern service stations since that time, due to growth of business, according to H. A. Barker, sales manager.

Motion pictures are used as advertising media and stations are shown in operation at theatres in the town.

New Equipment for Plant Improvement

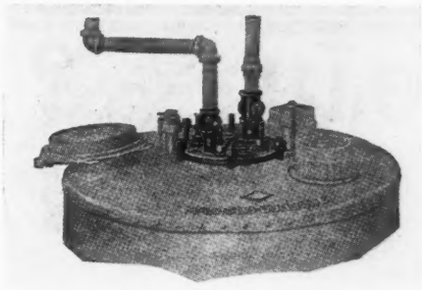
(Personal Notes of the Manufacturers)

National Petroleum News

Says Gas Tight Dome Cover Proves Successful in Use

CLEVELAND.—Herewith is a cut of the McDonald Universal Gastite dome cover. This device is put out by the A. Y. McDonald Manufacturing Co. of Dubuque, Ia. It is designed to be attached to the dome of a tank car while loading to cut down loss by evaporation during the loading. The company claims that from two to eight gallons per car of gasoline are saved, depending on the temperature and the volatility of the gasoline handled, by using this dome cover. The cut shows how the gastight cover fits into the dome opening.

The company also has developed a permanent dome cover of this type but its use so far is limited, the company having concentrated its attention on the temporary type, according to C. L. Reeder, manager of the oil equipment department. There are hundreds of the temporary type of dome cover in successful use, Mr. Reeder says.



McDonald Universal Gastite dome cover attached to tank car for loading or unloading.

National Transit Pump & Machine Co., Oil City, Pa.—Bulletin No. 410, just off the press, is devoted to Transit model 26 gas engine and gas compressor which is a single acting, four cycle, opposed type, designed to operate at 180 R.P.M., and rated at 170 H.P. The outfit was designed especially for compressing natural gas; for either transmission through pipe lines or for gasoline extraction processes.

A feature of the design is that with the exception of the main frames and cam shafts, all parts that are usually made right and left hand on a twin engine have been made interchangeable, so that they can be used on either side of the engine. This makes it possible to carry spare parts with minimum investment.

The booklet describes the various parts and operation of the outfit.

* * *

LOS ANGELES, Oct. 8.—Effective Oct. 1, F. G. Gassaway became general manager of the Petroleum Rectifying Co., with headquarters at Los Angeles. Mr. Gassaway graduated from the University of California in 1904, and was an early pioneer in the use of electricity in the oil fields of the state. Recently he has been identified with the Oklahoma Gas & Electric Co. as assistant manager. He is favorably known on the West Coast in mechanical, electrical and hydraulic engineering circles.

EAST CHICAGO, IND.—J. C. Winslow, advertising manager of the Graver Corp. announces that company has appointed William M. Gross in charge of sales and service of Graver water softening and filtering equipment in the Mid-Continent territory. Mr. Gross will have headquarters at the Graver Mid-Continent office, 810 Atlas Life building, Tulsa.

Mr. Gross has been with the Graver Corp. many years, having served in the engineering estimating and field erecting departments and having had several years' experience as a sales manager. He goes to Tulsa from New York where he was in charge of the Graver office. Previous to going to New York, Mr. Gross was assistant manager of water softening sales.

* * *

Butler Mfg. Co., Kansas City, Mo., announces that John A. Campbell, who has been representing the company in Arkansas and northern Louisiana, has been transferred to Tulsa territory, where his headquarters will be.

C. J. Ford succeeds Mr. Campbell in his former territory, with headquarters at Little Rock, Ark. Both men have been with the company for several years.

* * *

J. M. Davis, sales manager of the Western Machinery Co., Los Angeles, returned to headquarters last week after several weeks of business and pleasure in Utah.

General Electric Co., Schenectady, N. Y.—Bulletins on its automatic arc welding apparatus, which contains description and illustrations of welding for excitation of synchronous motors, head and accessories, have been published. The advantages of automatic arc welding, according to the bulletin, are that by maintaining a constant arc length, economy of electrical energy, increased speed and quality of welds as regards strength, uniformity and continuity, are attained.

Other features are the production of certain types of welds impossible by hand welding, the relief of strain on the operator and less skill required.

Bulletins have also been issued on its constant-speed, direct-current vertical motors, which attain almost perfect commutation through the use of commutating poles and by its design and construction.

The semi-automatic welder is another one of its line of welding equipment and is used for welding the circumferential seams of tanks or similar work.

Induction motor-generator sets, which are recommended for general service and are also described.

* * *

FULLERTON, CAL.—Dan L. Newton, president of the Newton Process Manufacturing Co. of Fullerton, Cal., with Mrs. Newton arrived home in Fullerton from South America on Sept. 22 by way of New York.

The Newton Process absorption gasoline equipment and plants have enjoyed considerable sale in South America during the past 12 months, and the increased export business necessitated Mr. Newton's personal supervision of several installations of complete plants and additional units in plants requiring additional equipment to take care of increased production. Mr. Newton reports considerable activity in the oil and gas fields of South America and relates many interesting incidents of the trip.

Newton Equipment is made at Fullerton, California, in a lately erected modern plant, and is distributed by Hurley Brothers of Tulsa, and the National Supply Co. of Toledo, O.

* * *

Crouse-Hinds Co., Syracuse, N. Y.—This manufacturer of electrical products has off the press advance sheets on its line of various types of condulets for all purposes, giving types, sizes and prices. A description as well as uses of the various types, as well as a description of other electrical equipment, is included.

Are you *turning away* Customers who want their Oil changed?

Even though your station is not equipped with drain pits or racks, you can now build up a big, profitable crankcase business. You can give your customers the kind of crankcase service they want. *Brookins Oil Measures* and *Brookins Portable Drain Tanks* make crankcase service easy.

With *Brookins Oil Measures,* you can refill any crankcase or serve from one to five quarts of oil *in one operation.* No matter where the oil intake is located, or how hard it may be to reach—the flexible metal hose puts every drop of oil right where it's wanted.

Another important feature: when oil is drawn into a Brookins Measure from a properly marked tank or drum, customers know they are getting accurate measurement *and the kind of oil they ask for.*

With the *Brookins Portable Drain Tank,* you can easily and quickly drain any crankcase by simply shoving the tank under the car and starting the oil flow.

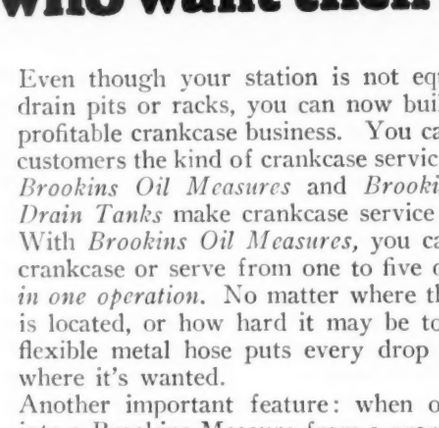
Order Brookins Measures, Portable Drain Tanks and Gasoline Cans from your jobber today.

THE BROOKINS MFG. CO.

342 Xenia Ave. Dayton, Ohio

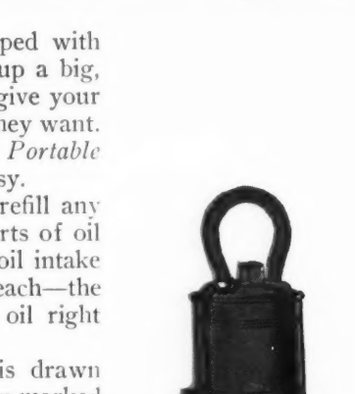
Brookins Gasoline Can

Carries extra gas to stalled cars — won't spill. No funnel needed even for hard-to-get-at gas tanks—flexible metal hose reaches them all. Made of heavy terneplate in two and five gallon sizes.



Brookins Portable Drain Tank

is 25 inches long, 11¼ inches wide, 4½ inches deep and holds about 4 gallons. Equipped with folding handle and steel runners. Can be drawn anywhere as easily as a sled, or can be carried with one hand even when full of liquid.



Brookins Oil Measure

Made in copper finish in one, two, four and five quart sizes. Has a flexible metal hose that reaches any oil intake without a funnel. A handy thumb-valve controls the flow of oil.

California Price War Ends; Gas 4 Cents Lower

LOS ANGELES, Oct. 8.—Apparently the gasoline price war in southern California is about to come to an end with a general cumulative cut of some 4 cents a gallon by all of the major companies, and a tank wagon price of 3 cents under. Prior to the price war, 4 cents profit was allowed the Independent dealer, but as he in many cases only passed the extra profit along to the purchaser, thus cutting under the major companies, the lower differential was fixed.

Today gasoline is sold at the service stations in Los Angeles and vicinity at 16½ cents, which includes the 2-cent tax. The service station price at San Francisco is now 18 cents instead of 22 cents as heretofore. A few of the bootleggers are still cutting under the major companies, but their prices now range from 14½ to 15½ cents a gallon, including tax. And this kind of competition is not worrying the larger companies, as the low priced stuff is a low grade gasoline.

The cut in price of gasoline at the service stations has had the effect of weakening natural gasoline, but the export market is affected to a very small extent, probably not one-half cent a gallon.

Strange to say, when gasoline was cut, no change was made in the price of kerosene, although engine distillate was cut 3 cents a gallon. There is little dealing in kerosene in California as only two major companies will quote tanker cargo lots, and practically all of the kerosene is exported.

TULSA.—An expansion program, which includes additional cracking units, at its Grandfield, Okla. refinery, will be completed on Nov. 1 by the Bell Oil & Gas Co. This plant will have a through capacity of 4000 barrels daily, according to Albert Finston.

The company's pipe line, gathering system and loading rack at Isom in the Texas Panhandle, is expected to be completed by Oct. 10. About 15,000 to 20,000 barrels of crude will be moved daily from the field, Mr. Finston states. This will require 450 tank cars which are now being put into service.

SCHENECTADY, N. Y.—Fuel oil storage has been installed here by the Autocraft Sales Corp., marketer of Autocraft gasoline and motor oil, ethyl gasoline and Havoline motor oil. Seven service stations are operated by the company, in addition to supplying several dealers in the vicinity with Autocraft products, according to Harry Cooper, assistant manager.

An advertising campaign helped put over the sale of Autocraft ethyl gasoline which the company has just began to market.

New Oil Station Construction

National Petroleum News

Cincinnati, O.—Queen City Petroleum Products Co. to build $175,000 service station in Walnut Hills, Cincinnati. Louis Levenson is president and John Stillpass vice-president. This will be the thirty-first station the company will operate.

* * *

Johnson City, Tenn.—G. H. Seawell, formerly with The Texas Co., has completed $10,000 filling station and will build two others shortly, one on West Market St., and the other at King and Montgomery Sts.

* * *

Oskaloosa, Ia.—Roxana Petroleum Co., St. Louis, Mo., plans to build bulk and service stations in Iowa, making Oskaloosa its distributing center.

* * *

Omaha, Neb.—J. A. Nelson, proprietor of the Nelson Oil Co., Marland distributor, will erect several service stations here.

* * *

Sallisaw, Okla.—E. S. Spear and J. A. Taylor, chairman of the board of county commissioners, are each building filling station.

* * *

Burlington, Ia.—Shell Co. completing distributing station and garage here, to be equipped with 80,000 gallons storage.

* * *

Steele, Mo.—Standard Service Co., Box 332, is planning to build a bulk and service station at Blytheville, Ark.

* * *

Columbus, Neb.—Community Filling Station Corp. will complete filling station here by Oct. 15.

* * *

Claremore, Okla. — Property bought here by Magnolia Petroleum Co. for service station.

* * *

Hallock, Minn.—Filling station will be erected here by Standard Oil Co. of Indiana.

* * *

Watertown, S. D.—Ted Lamm and Lavonne Cooke completing service station.

* * *

Oberlin, O.—Site purchased here by Cities Service Oil Co. for filling station.

* * *

Langdon, N. D.—Standard Oil Co. of Indiana to erect filling station.

* * *

Quimby, Ia.—R. W. Goodsen purchased site for filling station.

* * *

Missouri Valley, Ia.—Iowa Service Co. to erect service station.

* * *

Freedom, Okla. — Service Oil Co. building filling station.

Elizabeth, N. J.—Sure Service Filling Stations, Inc., is building five filling stations at Elizabeth, Newark and Harrison, N. J., according to H. A. Barker, sales manager.

* * *

Missoula, Mont.—McKenzie-Wallace Service Co., Box 1387, is building one bulk and three service stations at Great Falls, Mont.

* * *

Mayfield, Ky.—West Kentucky Oil Co. will add three new plants in the near future, according to Enoch D. Burnett, auditor.

* * *

Moundsville, W. Va. — Moundsville Gasoline & Supply Co. erecting bulk and service station.

* * *

Athens, O.—F. R. Beasley, of the Ford and Lincoln Garage, is completing service station here.

* * *

Titusville, Pa..—Service station being built here by Crew Levick Co., Philadelphia.

* * *

Clutier, Ia.—Filling station is being erected here by Will Novotny and Will Mundel.

* * *

Kansas City, Mo.—Permit for filling station here is being sought by Benzo Gas Co.

* * *

Weatherford, Tex.—Magnolia Petroleum Co. to build two Filling stations here.

* * *

Dayton, O.—Sun Oil Co., Philadelphia, Pa., to build $5,500 service station.

* * *

Sinton, Tex.—Magnolia Petroleum Co. completing $11,000 service station.

* * *

Tecumseh, Neb.—Vogt Auto Co. adding station to its building.

* * *

Lincoln, Neb.—Lincoln Oil Co. building $1500 filling station.

* * *

Tecumseh, Okla.—Carl Lightner building filling station.

* * *

Galveston, Tex.—The Texas Co. to build service station.

* * *

Kirksville, Mo.—Barnsdall Corp. completing filling station.

* * *

Georgetown, Tex.—W. A. Hinson to build service station.

* * *

Kingsville, Tex.—L. T. Cannon will erect filling station.

The
NATIONAL REFINING COMPANY
PETROLEUM PRODUCTS

THREE MODERN REFINERIES:
Marietta, Ohio Refinery
operated on Pennsylvania Crude
Findlay, Ohio Refinery
operated on Ohio Crude
Coffeyville, Kansas Refinery
operated on Midcontinent Crude

National Headquarters
NATIONAL BLDG., CLEVELAND, O.

Patent Pending
MORE OIL SALES
With oil displayed in this Rack holding 24 Dispensers. Has hinged caps covering each spout. All Bottle trays removable. The Neatest and Best Rack on the market.
Send for Particulars
WM. Neil & Co.
617 W. Division St. Chicago, Ill.

QUALITY

TOKHEIM

25 years Pioneering in Visible Pump Construction

TOKHEIM Cut 600 Visible

A Number to Remember

America's Greatest GASOLINE PUMP

Master-controlled by a single lever.

Predetermined Quantity Stops.

Mechanically operated Recording Meter.

A Visible Pump

that protects both consumer and retailer, and safeguards the mileage-reputation of the gasoline it dispenses.

Send for our new Book

QUALITY TOKHEIM Oil Tank & Pump Co.
Fort Wayne, Ind. U.S.A.

Always Right

Cut 605
Motor Drive

Cut 600
Hand Operated

"The Big ROUND Pump That's Always SQUARE!"

Roster of Oil Associations

National Petroleum News

American Association of Petroleum Geologists. Secretary, F. L. Aurin, Marland Oil Co., Ponca City, Okla.

American Chemical Society, Petroleum Division, Mellon Institute, Pittsburgh, Pa. Secretary, George A. Burrell, 1501 Columbia Bank Bldg., Pittsburgh, Pa.

American Gas Association, 342 Madison Ave., New York City. Secretary, Alexander Forward.

American Institute of Mining and Metallurgical Engineers, Petroleum Division. 29 West 39th St., New York. Chairman, Petroleum Section, F. Julius Fohs.

American Oil Burner Association, 350 Madison Ave., New York City. Executive Secretary, Leod D. Becker.

American Oil Chemists Society, 705 Tchoupitoulas St., New Orleans, La. Secretary-Treasurer, J. C. Helm.

American Oil Men's Association, 624 South Michigan Ave., Chicago, Ill. James A. Gilmore, Secretary and Manager.

American Petroleum Institute, 250 Park Ave., New York City Secretary, R. L. Welch.

American Society for Testing Materials, 1315 Spruce St., Philadelphia, Pa. Secretary-Treasurer, C. L. Warwick.

Arkansas Petroleum Club, Secretary, James P. Lavery, Petroleum Supply Co., ElDorado, Ark.

Arkansas-Tennessee Oil Marketers Association. Secretary, R. E. McKellar, care Diamond Oil Co., Memphis, Tenn.

Association of Oil Jobbers of Mississippi, Jackson, Miss. President, R. C. Clark, Independent Oil Co., Tupelo, Miss.

Association of Natural Gas Supply Men, Inc., 905 Oliver Bldg., Pittsburgh, Pa. Secretary, Guy F. Batchelor.

Association of Natural Gasoline Manufacturers, 504 A-B Cosden Bldg., Tulsa, Okla. Secretary, A. V. Bourque.

Association of Producers of Petroleum in Mexico, 17 Battery Place, New York, Director, Guy Stevens.

Association of Producers of Petroleum in Venezuela, 17 Battery Place, New York City. Director, Guy Stevens.

Chamber of Mines & Oils of California, 206 So. Spring St., Los Angeles, Calif.

Cincinnati Oil Club. Secretary, George H. Siemer, c/o Merchants Oil Co., Cincinnati, O.

Detroit Petroleum Club. Secretary, Frank McSweeney, Cities Service Oil Co., General Motors Bldg., Detroit, Mich.

Eastern Kentucky Oil Producers Association, Ashland, Ky. Secretary, David Browning.

El Paso Petroleum Club. President, A. L. Behringer, Home Oil Co., El Paso Tex.

Georgia-Alabama Independent Petroleum Marketers Association. Secretary-treasurer, W. L. Moore, Wofford Oil Co. of Georgia, Atlanta, Ga.

Greater Chicago Oil Men's Club. Secretary, Mel Keim, Apex Motor Fuel Co., 4555 W. 26th St., Chicago, Ill.

Gulf Coast Independent Oil Producers Association, 403 Goggan Bldg., Houston, Tex. Secretary, T. L. Smith, Jr.

Illinois Petroleum Marketers Association. Secretary, G. A. Primm, Chamber of Commerce Bldg., Springfield, Ill.

Independent Oil Men of America, 624 So. Michigan Ave., Chicago, Ill. (Advertising branch of National Petroleum Marketers Association.)

Independent Oil Men's Association of Massachusetts. Secretary, F. E. Bergfors, care Quincy Oil Co., Quincy Adams, Mass.

Independent Oil Men's Association of New England. Secretary, I. H. Farrar, Berkshire Oil Co., Worcester, Mass.

Independent Oil Marketers Association of Atlanta, Ga. Secretary, J. H. Smitha, care Community Oil Co., Atlanta, Ga.

Independent Petroleum Marketers Association of California, Inc., 930 Marsh-Strong Bldg., Los Angeles, Calif. Secretary and Manager, H. H. Maxson.

Indiana Independent Petroleum Marketers Association. Field Secretary, Sam T. Hurd, Connersville, Ind.

Iowa Independent Oil Men's Association, 225 Fifth St., Des Moines, Ia. Secretary, M. L. Long.

Kansas Oil Men's Association, 423 First National Bank Bldg., Wichita, Kan. Secretary, J. A. Motter.

Kentucky Oil Men's Association, Inc., 610 Trust Co. Bldg., Lexington, Ky. Secretary, Thomas S. Scott.

Michigan Independent Oil Men's Association, 1005 Grand Rapids National Bank Bldg., Grand Rapids, Mich. Secretary, James A. Gilmore.

Mid-Continent Oil & Gas Association, 505 Cosden Bldg., Tulsa, Okla. Secretary, Harry H. Smith.
Kansas-Oklahoma Division, 505 Cosden Bldg., Tulsa, Okla. Secretary, Harry H. Smith.
Louisiana-Arkansas Division, 724 Giddens-Lane Bldg., Shreveport, La. Secretary, Joseph B. Elam.
Texas Division, P. O. Drawer 1567, Dallas, Texas. Secretary, J. P. Laney.

Minnesota Petroleum Association, 638 Builders Exchange, Minneapolis, Minn. Secretary, Paul E. Hadlick.

Mississippi Oil Men's Association. Secretary, J. J. McEwen, 501 Capital National Bank Bldg., Jackson, Miss.

Missouri Oil Men's Association, 217 Dwight Bldg., Kansas City, Mo. Secretary, George S. Allee.

National Association of Independent Oil Producers, 414 Atlas Bldg., Tulsa, Okla. President, William H. Gray.

National Gasoline Dealers Association, Inc., 280 Madison Ave., New York City. Secretary, Thomas P. McKee, Jr.

National Petroleum Association, Munsey Bldg., Washington, D. C. Washington Counsel, Fayette B. Dow.

National Petroleum Marketers Association, Blum Bldg., 624 South Michigan Ave., Chicago., Ill. President, L. V. Nicholas.

Natural Gas Association of America, 905 Oliver Bldg., Pittsburgh, Pa. Secretary, Guy F. Batchelor.

Natural Gas & Petroleum Association of Canada, Chatham, Ont., Canada. Secretary, S. A. Morse.

Nebraska Independent Oil Men's Association, 416 Terminal Bldg., Lincoln, Neb. Secretary, C. M. Sutherland.

New York State Oil Producers Association, Wellsville, N. Y. President, Lewis H. Thornton.

New York State Petroleum Marketers Association, 1201 So. Salina St., Syracuse, N. Y. Secretary, Benjamin A. Javitz.

North Central Ohio Petroleum Club, 489 Cherry St., Marion, O.

North Dakota Petroleum Association. acting head, H. M. Wilson, care International Oil Co., Minot, N. D.

Northwest Independent Oil Association. Secretary, C. H. Brown, care Arro Oil & Refining Co., Lewistown, Mont.

Northwestern Pennsylvania Oil Producers Association, 78 Main St., Bradford, Pa. President, A. Edward Booth.

Ohio Gas & Oil Men's Association, 811 First National Bank Bldg., Columbus, O. Secretary, William H. Thompson.

Ohio Petroleum Marketers Association, 616 Commerce Bldg., Columbus, O. Secretary, R. W. Palmer, Accurate Measure Oil Co., 1884 E. Broad St., Columbus, O. Field Secretary, W. C. Hughes

Oil Men's Association. Secretary, F. W. Mitchell, Clinton Oil Co., Cleveland, O.

Oil Trade Association of Philadelphia. Inc. Secretary, Howard M Rogers, 123 Arch St., Philadelphia, Pa.

Oil Trades Association of New York, Inc., 35 So. William St., New York City. Secretary, Joseph C. Smith.

Oklahoma Oil Jobbers Association, 416 Fidelity National Bank Bldg., Oklahoma City, Okla. Secretary, C. M. Kinney.

Oklahoma Oil Marketers, Inc., P. O. Box 755, Enid, Okla. Secretary, W. W. Blackburne.

Okmulgee District Oil & Gas Association, Okmulgee, Okla. Secretary, Charles I. O'Neill.

Osage Oil & Gas Lessees Association, 505 Cosden Bldg., Tulsa, Okla. Secretary, Harry H. Smith.

Pennsylvania Grade Crude Oil Association, 209 Chambers Bldg., Oil City, Pa. Secretary, R. J. Alexander.

Petroleum Club of Central New York. Secretary, George R. Casey, Crown Oil Co., Syracuse, N. Y.

Pierce County Independent Gasoline & Oil Dealers Association, Executive Secretary, J. H. Stine, 1009½ Pacific Ave., Tacoma, Wash.

Purchasing Agents Association of Tulsa, 307 So. Cincinnati St., Tulsa, Okla. Secretary-Treasurer, O. V. Borden.

Rocky Mountain Independent Oil Men's Association, (formerly Colorado Petroleum Club), 411 Exchange Bldg., Denver, Colo. Secretary, A. Oberholtz, Jr.

Rocky Mountain Oil & Gas Association, P. O. Box 1559, Casper, Wyo. Secretary C. W. Sparr.

Rocky Mountain Oil & Gas Association, Montana Chapter, 222 Ford Bldg., Great Falls, Mont. Secretary, Walter F. Brittan.

South Dakota Independent Oil Jobbers Association, Sioux Falls, S. D. Secretary, F. H. Buehler, care Dacotah Oil Co., Madison, S. D.

Southern Petroleum Jobbers Association. Secretary, D. C. Patterson, Camden, S. C.

St. Louis Petroleum Club, 1430 So. Vandeventer Ave., St. Louis, Mo. Secretary, R. F. Leinberger, Blackmer Pump Co., St. Louis, Mo.

Springfield Petroleum Club. Secretary, Ross Lock, c/o Lock Bros., Oil Co., Springfield, Ill.

State Executives Club. Secretary, Paul E. Hadlick, Minnesota Petroleum Association, 638 Builders Exchange, Minneapolis, Minn.

Technical Club of Oklahoma, 208 Fisher Bldg., Tulsa, Okla. Secretary, R. I. Ginter.

Tennessee Independent Oil Men's Association, 151 North First St., Nashville, Tenn. Secretary-treasurer, Tom S. Cooper.

Texas Independent Oil Men's Association, Secretary, L. A. Greene, care Radio Petroleum Co., Fort Worth, Tex.

Virginia Independent Oil Men's Association. President, J. B. Belk, c/o Albemarle Oil & Gas Co., Inc., Garrett St., Charlottesville, Va.

West Virginia Oil and Natural Gas Association, Fairmont, W. Va. Secretary-Treasurer, Edwin Robinson.

West Virginia Oil Marketers Association. 513 Peoples Exchange Bank, Charleston, W. Va. Secretary and Treasurer, D. E. Frierson.

Western Petroleum Refiners Association, 504 Cosden Bldg., Tulsa, Okla. Managing Director, Howard Bennette.

Wisconsin Independent Oil Jobbers Association. Field Secretary, R. A. Overholser, Gay Bldg., Madison, Wis.

Wyoming Petroleum Club. Secretary, G. H. O'Donnell, 847 So. Lincoln St., Casper, Wyo.

There is a constant market in used equipment

Take advantage of the savings possible by buying what you need or selling what you don't need.

An advertisement in our classified section costs only $4 an inch with a border and display heading. Without a border 10 cents a word, minimum charge $3.

Tell them your needs in next week's issue.

Oil Patents Issued Recently

Refining

Pump—George D. White, Port Arthur, Tex., assignor to The Texas Co., New York, N. Y. Filed Feb. 12, 1923. No. 1,600,440.

Electric Insulator for Stills—George D. White, Port Arthur, Tex., assignor to The Texas Co., New York, N. Y. Filed Oct. 19, 1923. No. 1,600,441.

Process for Treating Hydrocarbons—Carbon P. Dubbs, Wilmette, Ill., assignor to Universal Oil Products Co., Chicago, Ill. Filed Jan. 12, 1920. No. 1,600,721.

Oil-Treating Composition — Herman Reinbold, Omaha, Neb. Filed Aug. 15, 1925. No. 1,600,845.

Process of Recovering Light Oils from Residual Products—Alfred Oberle, Oak Park, Ill., assignor of one-half to Thomas E. Scofield, Kansas City, Mo. Filed Apr. 14, 1924. No. 1,599,429.

Apparatus for Hydrogenating Oils—Edward L. Anderson, Long Beach, Cal., assignor of one-fourth to Edward F. Therieau, Long Beach, Calif. Filed Mar. 26, 1923. No. 1,599,629.

Method of Preparing an Emulsion for the Purification of Oils—Paul W. Prutzman and Paul D. Barton, Los Angeles, Calif., assignors to General Petroleum Corp., Los Angeles, Calif. Filed June 25, 1925. No. 1,599,715.

Process of Treating Oil—Ernest O. Linton, Indiana Harbor, Ind., assignor to Linton Gasoline Process Co., Chicago, Ill. Filed Dec. 8, 1920. No. 1,599,777.

Apparatus for Distilling Decomposable Materials—Warren K. Lewis, Newton, Mass., assignor to Humble Oil & Refining Co., Houston, Tex. Filed Nov. 10, 1922. No. 1,599,824.

Art of Distilling Easily-Decomposable Materials—Warren K. Lewis, Newton, Mass., assignor to Humble Oil & Refining Co., Houston, Tex. Filed Dec. 30, 1922. No. 1,599,825.

Oil Refining Still—Francis C. Moore and Perry Vandervort, Long Beach, Calif. Filed Sept. 4, 1924. No. 1,599,833.

Manufacture of Lubricants—Morris C. Van Gundy, Houston, and Joseph B. Scanlin, Port Arthur, Tex., assignors to The Texas Co., New York, N. Y. Filed Sept. 21, 1923. No. 1,599,854.

Production

Counterbalance for Pumping Rigs—Walter C. Trout, Lufkin, Tex. Filed Apr. 15, 1926. No. 1,599,440.

Pump Jack—William B. Flynn, Beaumont, Tex. Filed Dec. 19, 1925. No. 1,599,463.

Standing Valve—Sidney C. Ashton, Kansas City, Mo., assignor to The Ellis Manufacturing Co., Kansas City, Kans. Filed Apr. 27, 1925. No. 1,600,210.

Well-Drilling Bit—Walter T. Woods, Long Beach, Calif., assignor to U. S. Tool Co., Long Beach, Calif. Filed Apr. 28, 1924. No. 1,600,265.

Well Apparatus—Frederick E. Voorhies, Long Beach, Calif. Filed Jan. 15, 1925. No. 1,600,439.

Reamer—John F. Ketchey, Dallas, Tex. Filed Oct. 17, 1925. No. 1,600,476.

Oil-Well-Drilling Tool—Benjamin F. Schmidt, Los Angeles, Calif., assignor of one-fourth to King C. Gillette and of one-fourth to King G. Gillette, both of Los Angeles. Filed Oct. 3, 1921. No. 1,600,492.

Pump Jack—William B. Flynn, Beaudale, Calif., assignor of one-third to Samuel C. Carter, Glendale, Calif., and one-third to Anson Robinson, Los Angeles, Calif. Filed Dec. 7, 1925. No. 1,600,576.

Paraffin Scraper for Well Appliances—Charles S. Crickmer, Dallas, Tex., assignor to The Guiberson Corp., Dallas, Tex. Filed Mar. 3, 1926. No. 1,600,577.

Deflector and Scraper for Well Appliances—Charles S. Crickmer, Dallas, Tex., assignor to The Guiberson Corp., Dallas, Tex. Filed Mar. 3, 1925. No. 1,600,578.

Rotating Rotary Jar — Charles E. Thomas, Los Angeles, Calif. Filed July 22, 1925. No. 1,600,744.

Tong—Thomas W. Coates, Velasco, Tex. Filed Nov. 14, 1923. No. 1,599,808.

Wire-Line-Guide Attachment for Oil-Well Derricks—Edwin W. Goeser, Los

Angeles, Calif., assignor to Emsco Derrick & Equipment Co., Los Angeles, Calif. Filed Mar. 29, 1924. No. 1,599,709.

Reamer—Harry C. Metzger, Los Angeles, Calif. Filed July 22, 1925. No. 1,600,770.

Underreamer—William E. Youle, Los Angeles, Calif. Filed Oct. 2, 1922. No. 1,600,783.

Hydraulic Deep-Well Pump—John S. Watts, Los Angeles, Calif. Filed Mar. 2, 1926. No. 1,599,601.

Mechanically-Operated Standing Valve for Oil-Well Pumps—John A. Dyson, Los Angeles, Calif. Filed May 14, 1924. No. 1,599,879.

Combination Rotary Drilling Machine—Rowland F. Hill and Fredrick J. Schwimmer, Toledo, Ohio, assignors to The National Supply Co., Toledo, Ohio. Filed Feb. 19, 1924. No. 1,599,890.

Process of and Apparatus for Dehydrating Crude Petroleum Oil—Harold Orin Ballard, Bartlesville, Okla., assignor to Doherty Research Co., New York, N. Y. Filed Apr. 10, 1919. No. 1,600,030.

Rotary Core Barrel and Drilling Bit. Herman C. Smith, Whittier, Calif. Filed June 22, 1925. No. 1,600,073.

Bull Wheel—James A. Crumley, Charleston, W. Va., assignor of one-half to Elvyn L. Keller, Charleston, W. Va. Filed Oct. 23, 1925. No. 1,600,098.

Rotary Deep-Well-Boring Apparatus—Earl Abner Reed, Okemah, Okla., assignor to Bess L. Reed, Houston, Tex. Filed Aug. 21, 1924. No. 1,600,138.

Well-Casing Spider Slip—Reuben C. Baker, Coalinga, Calif., assignor to Baker Casing Shoe Co., Huntington Park, Calif. Filed Oct. 9, 1924. No. 1,600,863.

Well-Casing Spider Slip—Reuben C. Baker, Coalinga, Calif., assignor to Baker Casing Shoe Co., Huntington Park, Calif. Filed May 10, 1926. No. 1,600,864.

Natural Gasoline

Apparatus for Drying and Cooling Gases Preferably for the Purpose of Liquefaction of Gas—Arthur Seligmann, Bremen, Germany. Filed Feb. 21, 1924. No. 1,599,681.

Miscellaneous

Seal for Crevices in Oil-Tank Roofs and the Like—Leslie A. Baldwin, Chicago, Ill., assignor to Johns-Manville, Inc., New York, N. Y. Filed Sept. 3, 1925. No. 1,599,549.

Lubricating Compound—Thomas S. Hamilton, Los Angeles, Calif. Filed Aug. 8, 1925. No. 1,599,963.

Process of Resinifying Aliphatic Aldehydes—Willy O. Herrmann and Hans Deutsch, Munich, Germany, assignors to Consortium fur Electrochemische Industrie G. m. b. H., Munich, Germany. Filed Oct. 16, 1922. No. 1,600,113.

Manufacture of Aluminum Chloride—Richard J. Dearborn, Summit, N. J., assignor to The Texas Co., New York, N. Y. Filed Nov. 29, 1921. No. 1,600,216.

Oil Tester—Jack D. Sartakoff, New York, N. Y., assignor of one-half to J. D. Sartakoff Corp., New York, N. Y., and one-half to Khetah Corp., New York, N. Y. Filed June 24, 1924. No. 1,600,250.

Tank Car—Thomas Beaghen, Jr., Mount Vernon, N. Y. Filed Sept. 21, 1921. No. 1,*00,393.

Purification of Crude Alcohols—Rene de M. Taveau, Elizabeth, N. J., assignor to The Texas Co., New York, N. Y. Filed Aug. 5, 1924. No. 1,600,437.

Apparatus for Grounding Containers in the Distribution of Petroleum Products—Louis D. Jurs, Oakland, Calif., assignor to Associated Oil Co., San Francisco, Calif. Filed Jan. 15, 1923. No. 1,600,549.

Retort for Treating Oil Shale.—Edward B. Roth, St. Louis, Mo. Filed Mar. 9, 1925. No. 1,598,882.

Furnace-Wall Construction.—Robert T. Haslam, Belmont, Mass., assignor to Standard Development Co. Filed Aug. 16, 1923. No. 1,599,010.

Production of Bromine.—Robert E. Wilson, Chicago, Ill., assignor to Standard Oil Co., Whiting, Ind. Filed Nov. 24, 1924. No. 1,599,108.

Tank Cover.—Leslie A. Baldwin, University City, Mo., assignor to Johns-Manville, Inc., New York, N. Y. Filed July 15, 1925. No. 1,599,109.

Vapor Seal for Tanks and Method of Making the Same.—Leslie A. Baldwin, University City, Mo., assignor to Johns-Manville, Inc., New York, N. Y. Filed July 15, 1925. No. 1,599,110.

Condenser and Tube Cleaner Therefor.—Will H. Phillips, Chicago, Ill., assignor to Worthington Pump and Machine Corp. Filed Sept. 13, 1920. No. 1,599,283.

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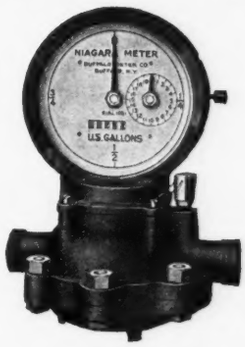

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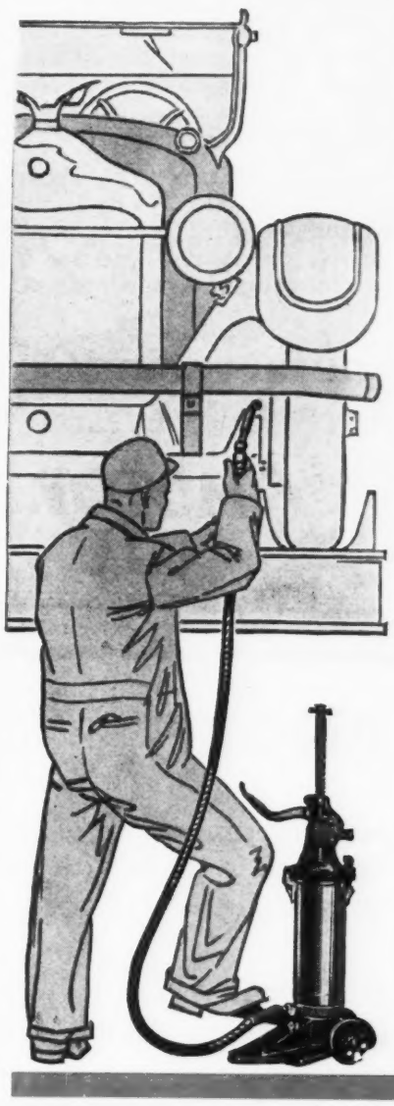

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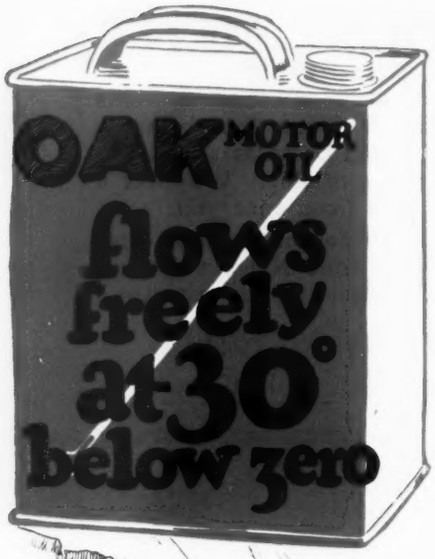

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Workers Do The Talking At This Conference

CHICAGO, Oct. 8.—The title, "Industrial Relations Plan," has a formidable sound. The announcement that a conference is to be held on this subject suggests at once a room filled with experts in economics, sociology, with welfare workers, an atmosphere where the reasoning is abstract, where six-cylinder words are employed.

How far away from this an industrial relations conference can get was indicated by the program of the Standard Oil Co. of Indiana's eighth annual meeting, held in Chiciago recently.

Such a subject as "Vacations with Pay for Hourly Paid Men," for instance, touches intimately the lives of a large number of employes. Clifford A. Miller, pumper, from the Casper refinery was to speak on this subject.

On the side of inter-company affairs, other addresses to be made were: "Every Employe a Booster and a Salesman," by Michael J. Thuma, clerk and stenographer, general office; "Morale Building vs. Morale Destroying Organization," by Leo McDonald, foreman, Greybull refinery; "Employes' Stock Ownership," by A. O. Hodges, assistant engineer, Sugar Creek refinery; "Influence on Plant Morale of Our Present Method of Making Promotions," by W. I. Jolly, superintendent of Construction, Wood River refinery.

On the company's public relations: "Political Agitations Against the Standard Oil Co. of Indiana," by George Ovens, pressure stillman, Laramie refinery; "Standard Oil Co. Services to the Public," by James R. Judson, shift foreman, filtering oils department, Whiting.

The morning session was devoted to reports made by the several joint general committees, including: Wages and Hours of Labor; Working Conditions and Safety; Conciliation, Athletics and Recreation; Rules and Procedure.

Delegates were represented by spokesmen, as follows: Miss Lulu Vollriedem, general office; W. H. Howland, draftsman, Casper; D. E. Starke, stillman, Greybull; Roy T. Stewart, machine shop foreman, Laramie; F. G. Lee, foreman carpenter, Sugar Creek; Edward Silvers, carpenter, Whiting; J. B. Lama, office clerk, Wood River.

The delegates met at night at the annual dinner in the Congress Hotel. Joseph E. Morgan, assistant in inspection department, Casper, is toastmaster and those on the toast list include: Charles L. Rose, electrician, Casper; George A. French, clerk railroad sales department, general office; Ed. L. Wood, car loader, Laramie; Albert P. Duff, helper, Sugar Creek; James A. Malo, locomotive engineer, Whiting; William E. Kelly, motorman in bricklaying department, Wood River; Col. Stewart and Dr. Burton.

ON THE LAZY BENCH

National Petroleum News

Hardly as Many Lights, Though

The husband was showing his wife over the new home in which they were to live.

"Do you like it, dear?" he asked.

"Oh, it's perfectly wonderful," she replied. "Those beautiful windows! The wonderful floors! The fine furniture—why it's almost as nice as a filling station!"

—American Refining Co. Eagle.

◆ ◆ ◆

Say It With Flowers

Helen (rapturously, in flower garden): "Oh, isn't that Baby's Breath beautiful?"

Henry (the matter-of-fact husband): "Yes, dear, only you're a little previous. It isn't Baby's Breath but Bridal Wreath."

—Bottles.

◆ ◆ ◆

Can You Tell Our Chemist This?

Why should the public kick about one-piece bathing suits? Why ask a girl to wear more when she goes into the water than when she is walking down the street?

—Marland Service Man.

◆ ◆ ◆

Sambo: "What is de difference between a dog an' a book?"

Rastus: "I don' know."

Sambo: "Well, suh, de book has its tale on de inside, while de dog has its tail on de outside."

Sure Proof

"What makes you say these flowers are bachelor buttons?" asked the botany professor.

"Because they're not sewed onto anything," answered the girl who knew.

A Counter Claim

"Prithee, Timisthones, define to me the meaning of the word 'biology.'"

"Methinks, Ayisander, it is the science of shopping."

Willie Recites

Teacher: Can any one tell me how iron was discovered?

Willie: I heard my dad say they smelt it.

Friendly German (to waiter)—"Wie geht's?"

Waiter—"One order of wheat cakes."

German—"Nein, nein?"

Waiter—"Nine? Boy, you sure are hungry!"

The Rural Comeback

A city lad stopped along the side of a country road and got out of his car to josh a barefoot rural boy. Leaning over a Tagolene sign which happened to be handy, he said:

Your corn is a little yellow, isn't it, son?"

"Yes, sir, that's the kind we planted."

"Not going to have more than a half a crop, are you?"

"No, sir, the landlord gets the other half."

"Then there's not much between you and a damfool, is there?"

"No, sir, nothing but that Tagolene sign."

—Skelly Service.

◆ ◆ ◆

Too Fresh To Keep

"You had some fresh shrimp here last week—" began the young lady customer. "Now—" "Yes'm," interrupted the market man, apologetically, "But I fired both of 'em."

◆ ◆ ◆

Tee, Hee

She (coyly): "But, Harold, are you sure you love me?"

He: "Well, what do you suppose I'm doing—trying to wrestle?"

—Bottles.

◆ ◆ ◆

Absolutely!

"And you say you guarantee these canaries?"

"Guarantee them? Why, madam, I raised them from canary seed!"

Appropriate Simile

Customer: See here! You said this suit would wear forever. I've had it three weeks and its rusty already.

Merchant: Well, I said it would wear like iron, didn't I?

Tobacconist (to new boy): "I'm starting you out at five dollars per week, but you'll get more as soon as you know the ropes."

—Skelly Service.

◆ ◆ ◆

Boss—"If Mr. Simpson calls today tell him I'm out."

Clerk—"Yes, sir."

"And don't be doing any work, or he won't believe you."

◆ ◆ ◆

Cop—"Hey, where are you going? Don't you know this is a one-way street?"

Abe—(in new car)—"Vell, I'm going von vay, ain't I?"

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to suit its speed
and seal its power

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A POWERFUL weapon in Sinclair's "War on Waste" is the Sinclair Law of Lubrication. This law tells the motorist that his engine has a "*degree of wear*" which requires just the right grade of oil "to suit its speed and seal its power". And he should change the lubricating oil in his car to fit its changing "degree of wear".

In following this Law of Lubrication, Sinclair dealers are rendering a real service to motorists. There is a science behind it—there's a real service behind it. There is a "War on Waste" behind it—a war on inefficient and destructive operation of machinery. Sinclair Opaline Motor Oil increases the efficiency and prolongs the life of the engine! It helps the motorist maintain economical transportation.

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MOTOR OIL

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Refinery - Tank Wagon Markets

National Petroleum News

More Buying Helps Group 3 Gasoline; Fuel Oil Prices are Lower

Staff Special

Tulsa, Oct. 9.

BETTER buying by jobbers who still insist upon immediate shipment, held the Mid-Continent gasoline market in good shape this week. Better weather in a considerable part of consuming territory was generally considered the major factor in this improvement.

None of the refined gasolines showed notable price, fluctuation. Natural gasolines lost a little ground on spot sales although manufacturers reported many contract customers had increased their orders. Kerosenes also experienced price recessions, although today a little better demand was noted in Oklahoma. Fuel oils were more freely offered and lower prices set.

The Standard Oil Co. of New Jersey, Oct. 4, reduced export gasoline ½ cent a gallon. This was the second reduction in eight days, and pulled the posted contract price of 64-66, 375 end point gasoline which company is buying from Oklahoma and Texas refiners down to 10.05 cents f. o. b. Oklahoma plants, and 10.15 cents north Texas refineries.

Cut Had No Effect

THIS reduction had little effect on the higher gravities and no effect on the general market. In fact late in the week higher gravity gasolines were in such good demand that several marketers were reported to have booked quantities of both 60-62, 400 e. p. and 64-66, 375 e. p. gasolines for over October for speculation. Little of high gravity gasolines was available in north Texas for spot shipment as a result of this buying.

One factor is being closely watched now with reference to the contracts held by both the Standard and Independent exporter. These contracts permit cancellation if the posted price of 64-66, 375 e. p. gasoline falls to 10 cents or lower. Another ¼ cent reduction by the New Jersey Company would bring the price under 10 cents.

There was some talk this week that refiners who had contracts would attempt to cancel even at present prices, but a careful check of the field failed to develop any definite move along that line. One large refiner in north Texas who has a contract for approximately 750,000 gallons monthly, said he expected to continue shipments on the contract, but that he was not going to make more high gravity gasoline than the contract required, and would have none to offer on the spot market.

Another Texas refiner who has a contract said that he would continue to ship because if he cancelled he would not know what to do with his gasoline.

"If refiners cancelled their contracts," he said, "where would they put their gasolines? They would have to cut back to lower gravity gasolines, and this increased production of a commodity which hasn't any too much support at the present time would only tend to demoralize the market."

Cotton Situation Watched

ARKANSAS and Louisiana refiners have a situation brewing which they fear may develop into a real problem. This situation is the low price of cotton. The Arkansas-Louisiana group move a considerable part of their gasolines into the cotton states. If the cotton farmers cannot pay their bills it is not likely they will have much money for automobiles or motor fuels this winter. Banks with frozen loans already have received federal aid. If refiners in that area cannot move their output into the normal channels they naturally would turn to Indiana territory as an outlet since they can, at least, move goods north on the same freight basis as Group 3. Group 3 felt the effect of such a movement last summer when Arkansas, Louisiana and Texas gasolines were shipped to the Indiana territory.

One Louisiana refiner said today that he already had begun to tighten credits to jobbers. One ray of hope as far as the refiners are concerned, is the rains throughout Arkansas, Oklahoma and part of Louisiana.

It is problematical however as to the extent of the rains' damage to cotton crops, and this damage may not be noticeable for the next 60 or 90 days.

There is a feeling that the markets through the remainder of October will show little change, but that prices are about on the bottom. Refiners say they cannot afford to accept less money for their goods. In fact they say they are losing on every barrel of crude charged to stills.

One Oklahoma refiner who is regarded as a careful operator said this week that he was losing around 44 cents a barrel on crude, allowing for depreciation, or around 23 cents a barrel actual loss. Texas refiners declare they are losing from 25 to 35 cents a barrel and several said they had reduced crude runs.

Kansas In Fair Shape

KANSAS refiners have been in fairly good shape on almost all commodities. Floods early in the week caused a few plants to close temporarily, and several refiners say they are slightly oversold. There is a scarcity of kerosene in that state, and refiners continue to buy from Oklahoma refiners to supply their own trade.

Grade A natural gasoline has been in good demand most of the week, and material has been relatively scarce. Grade AA has been more freely offered, however, and one company which had bought a quantity of Grades AA and BB for over the month, and who were being pushed for instructions on some of the cars already loaded, quietly offered a few cars as low as 9 cents for the deferred shipment in order to get material moving. Spot sales, however, on Grade AA were held at 9¼ cents today.

Kerosene continued to be nervous. Reports of better weather were taken by factors here as an indication that farmers would be getting back into the fields for their fall plowing, with the possibilty of an increase in demand for kerosene. Several were of the opinion, however, that jobbers were fairly well stocked and that no immediate reaction would be noticed. The Tulsa buyer for a large northern jobber said Friday that he would consider a purchase of kerosene for deferred shipment at 7 cents a gallon a good buy, that the market in his opinion was almost on the bottom.

Distillates were unchanged. Demand has been good enough to prevent any increase in stocks and refiners who are making the product have found no difficulty in moving it almost at their own prices. The strength of distillates can be judged from the fact that no price

(Continued on page 117)

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Refinery Markets on Light Oils and Lubricants

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California and New England

GASOLINE AND NAPHTHA

	Prices Oct. 11	Prices Oct. 4	Prices Sept. 27
PENNSYLVANIA			
52-54 Naphtha	12¼ 12¾	12¾-12¾	12¼ 12¾
54-56 Naphtha	12½ 13	12½ 13	12½-13
58-60 Gasoline	12½ 12¾	12¾ 13	12¾-13¼
60-62 Straight-run gasoline	13 -13½	13½ 13¾	13⅝-13⅞
64-66 Straight-run gasoline	14 -14¼	14 14¼	14¼-14½
68-70 Straight-run gas. 350-360 E.P	14¾ 15	14¾-15	15 -15¼
68-70 Straight-run gas. 305-320 E.P.	18 -19	18 -19	19 -20
OKLAHOMA			
48-50 450 E. P. naphtha	9¾ 10	-10	-10¼
50-52 450 E. P. naphtha	9¾ 10	-10	-10¾
56-58 450 E. P. gasoline	9⅝ 9¾	9¾ 9⅞	10¾-10¾
56-58 U. S. Motor gasoline	- 9⅞	9⅞-10	-10¾
58-60 450 E. P. gasoline	- 9¾	9¾ 9⅞	-10¼
58-60 U. S. Motor 437 E. P.	10 -10¼	10 -10¼	10¼-10½
60-62 400 E. P. gasoline	10½ 10¾	10⅝ 10¾	10⅞ 11⅛
64-66 390 E. P. gasoline	10¾ 11	10⅞-11	11¼ 11⅜
64-66 375 E. P. gasoline	11 -11¼	11 11¼	11⅜-11½
68-70 350-360 E. P. gasoline	11¾ 11⅞	11¾ 11⅞	-12
64-66 437 E. P. blend	9¾ 10	9¾-10	-10¼
KANSAS*			
58-60 U. S. Motor gasoline	10½-10¾	10⅝-10¾	10¾-11
*F. O. B. refinery Kansas destination.			
NORTH TEXAS			
48-50 450 E. P. naphtha	- 9¾	- 9¾	-10
56-58 450 E. P. gasoline	- 9½	9⅝- 9¾	-10
58-60 450 E. P. gasoline	9½- 9⅝	- 9¾	10 -10⅛
56-58 U. S. Motor gasoline	9¾- 9⅞	9¾- 9⅞	-10⅜
58-60 U. S. Motor gasoline	-10	9⅞ 10	10⅛-10¼
64-66 390 E. P. gasoline	-10½	-10½	* -11¼
64-66 375 E. P. gasoline	-10¾	*10½ 11	11¼-11½
68-70 350-360 E. P. gasoline	-11¾	-11¾	-12
NORTH LOUISIANA			
58-60 U. S. Motor 437 E. P.	10¼-10⅜	10¼-10⅜	10½-10¾
ARKANSAS			
56-58 450 E. P. gasoline	10⅜-10¼	-10¼	.....
58-60 450 E. P. gasoline	-10¼	-10¼	-10½
58-60 U. S. Motor gasoline	10¼-10½	-10½	-10¾
CALIFORNIA			
*53-55 U. S. Motor 437, E.P.	9 - 9½	11½-12	11½-12
*56-58 U. S. Motor, 437 E.P.	10½-10¾	-12½	-12½
*62-45 Engine distillate, 445-480 E.P.	7 - 7½	9¼-10	9¼-10
*2c tax included.			
NEW ENGLAND (F. O. B. Boston and Fall River)			
58-60 U. S. Motor gasoline	-12¾	-13	-13¼

NATURAL GASOLINE

(Note: End point of all grades, not over 375° F.)

OKLAHOMA			
Grade AA, 80-87.9, 375 E.P.	9¼- 9½	9½ 9¾	9¾-10
Grade A, 72-79.9, 375 E.P.	9¼- 9½	9½ 9¾	9¾-10
Grade BB, 84-92, 375 E.P.	- 9	9⅝ 9¼	9½ 9⅝
Grade B, 76-83.9, 375 E.P.	- 9	9⅛- 9¼	9½ 9⅝
Grade C, 80-90, 375 E.P.	8¾- 8⅞	9 - 9⅛	9⅜- 9½
NORTH LOUISIANA			
*Grade Double A	9⅝- 9¾	-10	-10¼
*Grade Double B	- 9½	9⅝- 9¾	-10
*Grade C	- 9	- 9¼	- 9¾
*F. O. B. Monroe District.			
NORTH TEXAS			
*Grade Double A	9¼- 9½	9⅝- 9¾	-10
*Grade A	9¼- 9½	9⅝ 9¾	-10
*Grade Double B	- 9	9 - 9¼	- 9¾
*Grade B	- 9	9 - 9¼	- 9¾
*Grade C	- 8¾	9 - 9⅛	- 9½
*F. O. B. Breckenridge.			
CALIFORNIA			
75-85° 375-390 E. P.	12 -12½	13½-14½	15½-16
PENNSYLVANIA			
68-70 Grav. 437 E. P.	13¾-13½	13¾-13½	13¾-13½
64-66 Grav. 437 E. P.	13½-14	13½ 14	13½-14
60-62 Grav. 437 E. P.	13½-14	13½-14	13½ 14
68-70 Grav. 420 E. P.	13½-14	13½-14	13½-14

BURNING OILS

PENNSYLVANIA			
45 Water White Kerosene	9¾ 10	-10	-10¼
46 Water White Kerosene	10 -10½	10½-10¾	-11
47 Water White Kerosene	10½-11	11 -11½	-11½
OKLAHOMA			
41-43 Water White Kerosene	7 - 7¼	7½- 7⅝	8 - 8¼
42-44 Water White Kerosene	7¾- 8	- 8	8½- 8¾
KANSAS			
41-43 w. w. kerosene	8¼- 8½	- 8¾	9¼- 9¾
42-44 w. w. kerosene	- 9	- 9¼	-10
NORTH TEXAS			
41-43 Water White Kerosene	7 - 7¼	- 7¼	7⅜- 8
NORTH LOUISIANA			
41-43 Water White Kerosene	- 8	- 8¼	9 - 9¼
ARKANSAS			
41-43 Water White Kerosene	- 8¼	- 8¼	- 9¼

†Quotations only, no sales recorded. *Prices nominal

CALIFORNIA	Prices Oct. 11	Prices Oct. 4	Prices Sept. 27
38-40 Water White Kerosene	6½- 7	7⅛- 8	7⅛- 8
NEW ENGLAND			
**40-45 Water White Kerosene	-11	-11¼	-11

NEUTRAL OIL

PENNSYLVANIA			
(Viscosity at 70° F.)			
200 Vis. No. 3 Assoc. Filt.	28¼-29	28¼-29	28¼-29
180 Vis. No. 3 Assoc. Filt.	26 -26¼	26 -26¼	26 -26¼
150 Vis. No. 3 Assoc. Filt.	23½-24	23½-24	23 -24
(Non-Viscous)			
34 Grav. 350-360 Flash	7½ 8	7½- 8	7½- 8
36 Miners Neutrals 300-305 Flash	7½- 7¾	7 - 7½	7 - 7½
OKLAHOMA			
(Viscosity at 100° F.)			
100 Vis. No. 2 color	7 - 7¼	7 - 7¼	7 - 7¼
150 Vis. No. 3 color	9¼-10	9¼-10	9¼-10
150 Vis. No. 4 color	- 9¾	- 9¾	- 9¾
180 Vis. No. 3 color	10 -11½	10 -11½	10¼-11½
180 Vis. No. 4 color	10 -10½	10 -10½	10 -10½
180 Vis. No. 5 color	10 -10¼	10 -10¼	10 -10¼
200 Vis. No. 3 color	10¾ -12½	11 -12½	11 -12½
200 Vis. No. 4 color	-11½	-11½	-11½
200 Vis. No. 5 color	9¼-11¼	9¼-11¼	9¼-11¼
220 Vis. No. 3 color	12 -13½	12 -13½	12 -13½
220 Vis. No. 4 color	-13	-13	-13
220 Vis. No. 5 color	12 -12¾	12 -12¾	12 -12¾
240 Vis. No. 3 color	14 -15	14 -15	14 -15
240 Vis. No. 4 color	-14½	-14½	-14½
240 Vis. No. 5 color	13 -14	13 -14	13 -14
280 Vis. No. 3 color	16 -17	16 -17	16 -17
280 Vis. No. 4 color	-16½	-16½	-16½
280 Vis. No. 5 color	15 -16	15 -16	15 -16
300 Vis. No. 5-6 color	-17	-17	-17
GULF COASTAL			
(Viscosity at 100° F; cold test 0)			
100 Vis. No. 2 Color Unfilt. Pale	8½- 9	8½- 9	8½- 9
200 Vis. No. 3 Color Unfilt Pale	11½ 12	11½ 12	11½-12
300 Vis. No. 3 Color Unfilt. Pale	12½ 13	12½ 13	12½-13
500 Vis. No. 3½ Color Unfilt. Pale	14 -14½	14 -14½	14 -14½
750 Vis. No. 4 Color Unfilt. Pale	17½ 18	17½-18	17½-18
200 Vis. No. 5½ Color Red Oil	10 10½	10 10½	10 -10½
300 Vis. No. 5½ Color Red Oil	11½ 12	11½-12	11½-12
500 Vis. No. 6 Color Red Oil	12½-13	12½-13	12½-13
750 Vis. No. 6 Color Red Oil	16 -17	16 -17	16½-17
CALIFORNIA			
(Viscosity at 100° F.)			
100 Vis. No. 2 color	9½-10	11 -11½	11 -11½
100 Vis. No. 3 color	8 - 8½	8½- 9	8½- 9
200 Vis. No. 3 color	10 -10½	13¼-14	13¼-14
300 Vis. No. 3 color	11 -11½	15 -15½	15 -15½
450 Vis. No. 3½ color	13 -13½	18 -18½	18 -18½
550 Vis. No. 3½ color	15 -15½	20 -21	20 -21
600 Vis. No. 3½ color	15½-16	21 -22	21 -22
100 Vis. No. 5 color	7 - 7½	7 - 7½	7 - 7½
200 Vis. No. 5 color	9 - 9½	12 -12½	12 -12½
300 Vis. No. 5 color	9½-10	13 -13½	13 -13½
400 Vis. No. 6 color	11½-12	15 -16	15 -16
500 Vis. No. 6 color	12 -12½	16 -17	16 -17
600 Vis. No. 6 color	12½-13	17 -18	17 -18
700 Vis. No. 7 color	14½-15	18 -19	18 -19

CYLINDER STOCKS

OKLAHOMA			
190-200 Vis. at 210° Bright Stock	31 -35	31 -35	31 -35
150-160 Vis. at 210° Bright Stock	27 -31	27 -31	28½-31
600 F Stock, 140-150 Vis. — 210°	18 -20	18 -20	-18
600 Steam Refined Olive Green	8 -11	8 -11	8 -11
600 Steam Refined Dark Green	6 - 8	6 - 8	6 - 8
Black Oil	5 - 6	5 - 6	5 - 6
Petroleum coke (Per ton)	$2 -$5	.....	.....
PENNSYLVANIA			
(1-inch Immersion Test)			
600 Steam Refined	11½-12	12¼-13	12¼-13
650 Steam Refined	16	16 -18	16 -18
600 Flash	21 -21½	21½-22	21½-22
625 Flash	31½ 32	31½ 32	31½-32
600 Warren E.	20½ 21	-21	-21
600 Oil City E.	19½ 20	-20	-20
600 D Filtered	26 -26½	26 -26¾	26 -26¾
Cold Test Stocks (bright filtered)	-41	41 -41½	40½-41½
Cold Test Stock (dark filtered)	-39	39 -39½	39 -39½

LONG RESIDUUM STOCKS

PENNSYLVANIA		
45-50 vis @ 210, 420-425 flash	-31	-32
50-55 vis @ 210, 430-435 flash	-32	-33
60-65 vis @ 210, 440-445 flash	-33	-34
70-75 vis @ 210, 450-455 flash	-34	-35
75-80 vis @ 210, 440-450 flash	-35	-35
80-85 vis @ 210, 440-450 flash	-35	-35
80-85 vis @ 210, 450-460 flash	-36	-36½
80-85 vis @ 210, 460-465 flash	-37	-37
95-100 vis @ 210, 490-495 flash	-38	-39

(Note—Prices of total immersion test goods average 1 to 3 cents per gallon higher.)

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Other equipment on which you may send prices.....

Name..... Address.....

Refinery Markets on Wax and Heavy Oil Products

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California and New England

WAX

PENNSYLVANIA	Prices Oct. 11	Prices Oct. 4	Prices Sept. 27
	(Per Pound, New York)		
122-124 White Crude Scale..	- 5¼	- 5¼	- 5¼
124-126 White Crude Scale..	- 5¾	- 5¾	- 5¾
OKLAHOMA	(Per Pound, Group 3)		
124-126 White Crude Scale..	4⅝ - 4¾	4⅝ - 4¾	- 4¾
CALIFORNIA			
White Crude Scale.....	6 - 7	6 - 7	6 - 7

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil.....	6¼- 6½	6¼- 6½	- 6½
30-34 Fuel Oil.....	5¾ 6	5¾- 6	- 6
28-30 Fuel Oil.....	5¾ - 6	5¾- 6	5¾- 6
OKLAHOMA			
38-40 Straw distillate.....	5¾- 6	5¾- 6	5¾- 6
36-38 Straw distillate.....	5½- 5¾	5½- 5¾	5½- 5¾
32-36 Gas oil. cracked (Gal.)	4¼- 4½	4¼- 4½	4¼- 4½
32-36 Gas oil, uncracked (Gal.)	4¼- 4¾	4¼- 4¾	4¼- 4¾
28-30 Fuel oil (Bbl.).....	1.50 -1 60	1.55 -1 60	1.55 -1.60
26-28 Fuel oil (Bbl.).....	1 40 -1.50	1.47½-1 55	1.50 -1 55
24-26 Fuel oil (Bbl.).....	1.35 -1.40	1.37½-1 42½	1.40 -1.45
22-26 Fuel oil (Bbl.).....	1.30 -1.35	1.30 -1 35	1.35 -1 40
18-22 Fuel oil (Bbl.).....	1.27½-1.30	1.27½-1 32½	1.27½-1 35
16-18 Fuel oil (Bbl.).....	1.25 -1.27½	1.25 -1.30	1.27½-1.32½
14-16 Fuel oil (Bbl.).....	1.22½-1.25	1.25 -1.30	1.27½-1.30
KANSAS*			
38-40 Light straw distillate..	5¾ - 6	5¾- 6	5¾- 6
36-38 Light straw distillate..	5¾ - 5⅞	5¾- 5⅞	5¾- 5⅞
32-36 Gas Oil.....	4½- 4¾	4½- 4¾	4½- 4¾
18-22 Fuel Oil.....	1.35 -1 40	1.35 -1.40	1.40 -1.45
24-26 Fuel Oil.....	1 50 -1.60	1.45 -1.55	1.55 -1.65

*F. O. B. refinery, Kansas destination.

NORTH TEXAS			
38-40 Straw Distillate.....	5¼- 5½	5¼- 5½	5¼- 5½
32-36 Gas Oil (Gal.) cracked	4 - 4¼	4 - 4¼	- 4¼
32-36 uncracked gas oil....	4½- 4¾	4½- 4¾	4¼- 4¾
24-26 Fuel per (Bbl.).....	1.45 -1.50	1.40 -1.50	1.40 -1.50
GULF COASTAL			
Fuel.....	1.55 -1.60	1.55 -1.60	1.55 -1.60
Gas Oil.....	5½- 5⅝	5½- 5⅝	5½- 5⅝

NORTH LOUISIANA	Prices Oct. 11	Prices Oct. 4	Prices Sept. 27
32-36 Gas oil, cracked (Gal.)	4⅜- 4¾	4⅜- 4¾	4⅜- 4¾
32-36 Gas Oil uncracked (Gal.)	4½- 4⅝	4⅜- 4½	4⅜- 4½
16-20 Fuel Oil (Bbl.).....	1.20 -1.30	-1.30	1.30 -1.35
ARKANSAS			
30-34 Gas oil.....	4⅜- 4¾	4⅜- 4¾	4⅜- 4¾
32-36 Gas Oil.....	- 4½	4¼- 4½	4⅜- 4½
Smackover Crude Fuel.....	1.27½-1.30	1.25 -1.30	1.25 -1.30
Road oil.....	1.26 -1.30	1.26 -1.30	1.26 -1.30
CALIFORNIA*			
14-18 Fuel Oil (Bbl.).....	85-1.00	1.00	1.00
14-18 Bunker Oil (Bbl.)....	85-1.00	1.00	1.00
24-30 Gas Oil (Bbl.).....	1.00-1.15	1.15	1.15
27 + Diesel Oil (Bbl.).....	1.00-1.15	1.15	1.15

*(San Joaquin Valley, San Francisco 4c per bbl. more.)

NEW ENGLAND (F. O. B. Boston and Fall River)			
30-32 Gas Oil (Gal.).....	- 6	6 - 6¼	- 6¼
Fuel Oil (Bunker C) Bbl...	-1.72	-1.80	-1.80

PETROLATUMS

PENNSYLVANIA			
Snow White.....	8½- 9	8½- 9	8½- 9
Lily White.....	7½- 8	7½- 8	7½- 8
Cream White.....	- 6½	- 6½	- 6½
Light Amber.....	- 3½	- 3½	- 3½
Amber.....	3¼- 3½	3¼- 3½	3¼- 3¼
Red.....	- 3	- 3	- 3
Green #5.....	1¾- 2	1¾- 2	1¾- 2

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

PETROLEUM COKE

(Per ton in car lots)

Lump.....	$5-$6
Breeze.....	2-2.25
Still Run.....	3.25-3.50

(Continued from page 113)

changes have occurred despite the lower kerosene prices which have prevailed.

Gas oil has been in better demand, especially the zero cold test grades. Prices have been generally unchanged, however, for several weeks.

Lower gravity fuel oils for some time past have been about the same in prices. This week, however, more 14-16 gravity oil was offered with the result that the price came down approximately 2½ cents a barrel. The other low gravities also broke away from the general price they had held. Higher gravity fuel oils were in better demand but there apparently was sufficient material offered and prices did not remain steady.

There has been a good movement this week of neutral oils and cylinder stocks and prices have remained steady except for some 200 vis. No. 3 neutral oil which has been moved at 10¾ cents. Several refiners are quoting 5 cents per pound on wax but almost without exception say they are not getting business at that figure at present.

LOS ANGELES, Oct. 9.—F. V. Gordon, well known oil producer of California for the past several years, was recently elected vice president of the California Petroleum Corp., and will have charge of land and leasing department.

Further Losses Reported in Florida Storm

CLEVELAND, Oct. 11.—The Standard Oil Co. of Kentucky and the Peninsular State Oil Co., subsidiary of the Sun Oil Co., each suffered losses estimated at $30,000 to $40,000 in last month's hurricane in southern Florida. Employes of neither company suffered serious injury and none was killed although the Standard had between 125 and 150 in Miami at the time of the storm.

The Standard was able to care for all business at all places within 24 hours after the storm, W. W. Zachry, district manager, said, and at some places it was inconvenienced only six to eight hours.

The Peninsular lost a warehouse and garage at Ft. Lauderdale valued at $6,000; two warehouses and garage roof together with 25,000 to 30,000 gallons of gasoline because of broken pipe lines, a loss of $15,000, and a small harbor barge valued at $12,000 at Miami.

A seagoing barge 170 feet long with capacity for 70,000 barrels of oil was driven against a concrete bridge of the Causeway at Miami, P. H. Harrison, vice-president of the Peninsular, said, and the starboard side was badly battered. Another barge of 5000 barrels' capacity was driven ashore and stranded 400 feet inland without apparent damage, Mr. Harrison said. Peninsular's losses were partly covered by insurance.

Motor Benzol More Plentiful

NEW YORK, Oct. 11.—Motor benzol was a trifle easier last week although the leading marketers are still demanding 24 cents a gallon in tank cars at the ovens for spot benzol. Consumption is still fairly heavy but most of this business is being taken care of by standing contracts. Production of coke is much heavier than anticipated and consequently the benzol output is larger.

The weakness in gasoline tank wagon prices has led some observers to look for a possible cut in motor benzol prices soon although marketers say there is little chance of another reduction immediately.

Texas Jobbers Meet Nov. 18, 19

SAN ANTONIO, Oct. 9.—The Texas Independent Oil Men's Association will have its annual meeting here Nov. 18 and 19. The program will be a good one, President R. N. Mullin, Calumet Oil Co., El Paso, says, but is not yet ready for announcement. It is being prepared by L. A. Greene, Radio Petroleum Co., Fort Worth; W. M. Harrison, Star Refining & Producing Co., Fort Worth; D. E. Little, Litwood Oil & Supply Co., Fort Worth and C. A. Slimp, Slimp Oil Co., San Antonio.

Chicago Markets Report Improved Demand for Gasolines

CHICAGO, Oct. 9.—THE first improvement since Labor day in gasoline demand in the Chicago resale market was noticed today when the trade reported gasoline was a trifle more active. Reports of favorable weather in consuming territory were received.

Gasoline demand was marked most of this week. Buying continued to be only for current requirements. One factor reported that Oct. 4 was the dullest Monday he had experienced in some time. A refiner, returning from a trip through the northwest, said jobbers told him they were letting stocks get low and were buying only for immediate needs in order to be in a good position in case of a tank wagon price reduction. Fair weather, which set in after the middle of the week, resulted in increased consumption today, the trade generally believed.

Gasoline prices held firm over the week. Monday 58-60 U. S. Motor gasoline sold for 10¼ cents. Tuesday 10⅛ to 10¼ cents was the market. This price held over the week. Several refiners held their price at 10¼ cents over the week. Factors that had been selling at 10⅛ cents for several days, advanced their quotations to 10¼ cents today.

Some gasoline was sold during the week at prices lower than the prevailing market. Several marketers reported selling U. S. Motor gasoline from Oklahoma at 10 cents to meet competition; others reported selling goods out of north Texas at 10 cents, Group 3 basis.

High test gasolines followed the market trend of U. S. Motor. There was slight demand. The prevailing price of 64-66, 375 e.p. gasoline was 11¼ to 11½ cents until the end of the week when bulk of sales was made at 11⅛ to 11¼ cents. There was a slight increase in demand today following reports from the field that the situation was better there.

Kerosene demand remained slack. Monday 41-43 water white kerosene was 7½ to 8 cents and by Tuesday the top of the market had fallen to 7⅞ cents. By the middle of the week 7½ cents was the market. More 7¼ cents goods were being offered late in the week, and today 7¼ to 7½ cents was the market. The 42-44 water white grade fell from 8 to 8¼ cent prices Monday to 7¾ to 8 cent today.

Distillate and gas oil were steady and prices unchanged. Over the week 38-40 straw distillate price was 5¾ to 6 cents, and 36-38 sold for 5½ to 5¾ cents. Gas oil was 4¼ to 4⅜ cents. Several factors reported distillate and gas oil were obtained more freely from the field but there was no reaction in the market.

Fuel oil was generally steady. While several factors reported fuels were dull, majority of the trade said the commodity was steady with demand continuing to be for small lots. The 18-22 fuel oil price remained pegged at $1.30 to $1.35. The 24-26 grade fell from $1.40 to $1.45 early in the week to $1.37½ to $1.42½ later. Smackover was firm at $1.27½ to $1.30.

Weather forecast for middle west for next week is for generally fair. Occasional rains for the first and middle periods are predicted. Temperatures are to be above normal for the first part, and cooler after Wednesday or Thursday.

Add Another to Jobber-Mayor's Club

MURFREESBORO, TENN., Oct. 9.—To the list of oil men who are mayors of the towns where they do business, add the name of Al D. McKnight. He is mayor of Murfreesboro and also state senator from this district. He is president of the Consumers Supply Co., Murfreesboro, distributors of Red Hat gasoline.

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California Casinghead Hit By Price Cuts

LOS ANGELES, Oct. 9.—The natural gasoline market has weakened considerably in California, due to the reduction in the price of motor gasoline 4 cents over the state. Also additional natural gasoline plants are being built and the wide use of the gas lift for producing wells is bringing about an increase in production.

At present, the market for natural gasoline is about 3 cents under the service station price of motor gasoline, less the 2 cent tax. As the present service station price of gasoline, without tax is 14½ cents, this makes the prevailing natural gasoline quotation 11½ cents a gallon. Contracts might name a different price, and a spot sale probably would call for a slightly higher price.

The Shell Co. is operating a new natural gasoline plant at Ventural Avenue, which will produce more than 1,000,000 gallons during October. The Richfield Oil Co. has purchased two small plants and is preparing to build two others. Some of the other companies are making arrangements, where possible, to produce their own natural gasoline for blending.

Floods Cause Kansas Plants to Suspend

Staff Special

TULSA, Oct. 9.—Flood waters caused a temporary shutdown at several refineries in Kansas early this week, but no property damage has been caused, according to reports gathered here.

The Derby Oil Co. refinery at Wichita was forced to close for about 48 hours, and the Roxana Petroleum Co. and the Kanotex Refining Co. plants at Arkansas City also were closed for about two days. The waters came within an inch or two of the top of the dykes around the Roxana plant, it was reported. At the Kanotex plant about six inches of water seeped into the boiler rooms.

The White Eagle Oil & Refining Co. plant at Augusta was down for two days, because waters prevented loading of materials. The waters came within 200 yards of the Skelly Oil Co. plant at El Dorado. The El Dorado Refining Co. plant also was threatened. All plants were operating again Thursday.

Atlantic Cuts Gasoline

PHILADELPHIA, Oct. 11.—On Oct. 12, it was announced, Atlantic Refining Co. will reduce tank wagon and service station prices of gasoline 1 cent through Pennsylvania and Delaware, making tank wagon price generally 19 cents in both states, excluding state taxes. Retail price became 23 cents, exluding taxes.

Kerosene remains unchanged at 17 cents tank wagon generally.

Tank Wagon, Service Station Markets for Gasoline and Kerosene In United States Territories and Canada

These Prices in Effect Oct. 11, 1926

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	19	0	19	*	16
Newark, N. J.	19	0	19	21	16
Annapolis, Md.	19	2	21	*	16
Baltimore, Md.	19	2	21	24	16
Cumberland, Md.	19	2	21	24	16
Washington, D. C.	19	2	21	24	16
Danville, Va.	19	4½	23.5	*	16
Norfolk, Va.	19	4½	23.5	26.5	16
Richmond, Va.	19	4½	23.5	26.5	16
Roanoke, Va.	19	4½	23.5	26.5	16
Petersburg, Va.	19	4½	23.5	*	16
Williamsburg, Va.	19	4½	23.5	*	16
Charleston, W. Va.	18	3½	21.5	24.5	16
Clarksburg, W. Va.	19	3½	22.5	25.5	16
Keyser, W. Va.	19	3½	22.5	*	16
Parkersburg, W. Va.	18	3½	21.5	24.5	16
Wheeling, W. Va.	18	3½	21.5	24.5	16
Charlotte, N. C.	19.5	4	23.5	26.5	16
Hickory, N. C.	19.5	4	23.5	*	16
High Point, N. C.	19.5	4	23.5	*	16
Mt. Airy, N. C.	19.5	4	23.5	*	16
Salisbury, N. C.	19.5	4	23.5	*	16
Charleston, S. C.	19.5	5	24.5	27.5	16
Columbia, S. C.	19.5	5	24.5	27.5	16

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

*New York City	21	0	21	25	18
Albany, N. Y.	17	0	17	19	18
Buffalo, N. Y.	20	0	20	23	18
Rochester, N. Y.	20	0	20	24	16
Syracuse, N. Y.	17	0	17	19	18
Boston, Mass.	19	0	19	21	18
Augusta, Me.	21	3	24	26	18
Manchester, N. H.	21	2	23	25	18
Burlington, Vt.	21	2	23	25	18

*In steel barrels.

ATLANTIC REFINING

Pittsburgh, Pa.	20	0	20	*25	17
Philadelphia, Pa.	20	0	20	*25	17
Allentown, Pa.	20	0	20	*25	17
Erie, Pa.	18	0	18	*23	15
Scranton, Pa.	20	0	20	*25	17
Altoona, Pa.	20	0	20	*25	17
Dover, Del.	20	2	22	25	17
Wilmington, Del.	20	2	22	25	17
Providence, R. I.	21	1	22	24	18
Boston, Mass.	19	0	19	21	18
Springfield, Mass.	19	0	19	21	18
Worcester, Mass.	19	0	19	21	18
Hartford, Conn.	19	2	21	24	17
New Haven, Conn.	19	2	21	24	18

*Contains 2-cent tax collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	18	5	23	26	18
Louisville, Ky.	17	5	22	25	17
Covington, Ky.	19	5	24	27	18
Clarksdale, Miss.	19	4	23	26	15.5
Jackson, Miss.	19	4	23	26	16.5
Natchez, Miss.	18.5	4	22.5	25.5	16
Vicksburg, Miss.	18.5	4	22.5	25.5	16
Birmingham, Ala.	20	2	22	25	18.5
Mobile, Ala.	19	2	21	24	17
Montgomery, Ala*	21	2	23	26	19.5
Atlanta, Ga.	†21	3½	25	28	19
Augusta, Ga.	†21	3½	25	28	19
Macon, Ga.	†21	3½	25	28	19
Savannah, Ga.	†19	3½	23	25	17
Jacksonville, Fla.	19	4	23	26	17
Miami, Fla.	21	4	25	28	18.5
Tampa, Fla.	19	4	23	26	17
Pensacola, Fla.	19	4	23	26	17.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia has ½ cent per gal. inspection fee on gasoline which is deducted as well as the state gasoline road tax of 3½ cents to get the actual net tank wagon market to dealer.

S. O. INDIANA

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Chicago, Ill.	†19	0	†19	21	15.5
Decatur, Ill.	19.2	0	19.2	21.2	16
E. St. Louis, Ill.	18.1	0	18.1	20.35	15.1
Joliet, Ill.	19.4	0	19.4	21.4	16.2
Peoria, Ill.	19.2	0	19.2	21.2	16
Quincy, Ill.	19.2	0	19.2	21.2	15.8
Indianapolis, Ind.	19.2	3	22.2	24.2	16.2
Evansville, Ind.	19	3	22	24	16
South Bend, Ind.	19.4	3	22.4	24.4	16.4
Detroit, Mich.	19.8	2	21.8	23.8	16.7
Grand Rapids, Mich.	19.7	2	21.7	23.7	16.6
Saginaw, Mich.	19.9	2	21.9	23.9	16.8
Green Bay, Wis.	18.6	2	20.6	22.6	16.3
Madison, Wis.	19.3	2	21.3	23.3	16
Milwaukee, Wis.	19.1	2	21.1	23.1	15.8
La Crosse, Wis.	20.2	2	22.2	24.2	16.9
Minneapolis, Minn.	20.2	2	22.2	24.2	17.1
Duluth, Minn.	20.5	2	22.5	24.5	17.1
Mankato, Minn.	20.1	2	22.1	24.1	16.9
Des Moines, Iowa	19.5	2	21.5	23.5	16.4
Davenport, Iowa	19.5	2	21.5	23.5	16.4
Sioux City, Iowa	19	2	21	23	16
Mason City, Ia.	19.5	2	21.5	23.5	16.4
St. Louis, Mo.	*18.6	2	20.6	22.9	15.5
Kansas City, Mo.	††19.9	2	21.9	23.9	14.8
St. Joseph, Mo.	*19	2	21	23	15.4
Fargo, N. D.	21.9	2	23.9	25.9	19.1
Grand Forks, N. D.	22.2	2	24.2	26.2	19.4
Minot, N. D.	21.9	2	23.9	25.9	19.1
Pierre, S. D.	20.5	3	23.5	25.5	17.6
Huron, S. D.	20.5	3	23.5	25.5	17.6
Wichita, Kans.	**17.8	2	19.8	21.8	15.3
Bartlesville, Okla.	17.8	3	20.8	22.8	15.3

†Dumps of 100 or more gallons at 18c per gallon.
*Includes city tax of ½c.
††Includes city tax of 1c.
**Dumps of 50 gallons or more in Kansas, 1c discount per gallon.

S. O. NEBRASKA

Crawford, Neb.	20	2	22	*	16.75
Omaha, Neb.	19.25	2	21.25	23.25	16
McCook	20.75	2	22.75	24.75	17.5
Norfolk	19.75	2	21.75	23.75	16.5
North Platte	20.75	2	22.75	24.75	17.25
Scottsbluff	20.25	2	22.25	24.25	16.75

*Standard has no service station here.

CONTINENTAL OIL

Denver, Colo.	20	2	22	22	18
Pueblo, Colo.	20	2	22	24	18
Grand Junction, Colo.	24	2	26	28	22
Casper, Wyo.	20	2½	22.5	24.5	16.5
Cheyenne, Wyo.	21	2½	23.5	25.5	18
Butte, Mont.	22	2	24	24	20.5
Helena, Mont.	24	2	26	28	20.5
Salt Lake City, Utah	20.5	3½	24	26	19
Boise, Ida.	22	3	25	27	21
Twin Falls, Ida.	22	3	25	27	21
Albuquerque, N. M.	25.5	3	28.5	28.5	20

S. O. CALIFORNIA

Phoenix, Ariz.	19	3	22	25	21.5
Los Angeles, Cal.	11.5	2	13.5	16.5	15.5
Fresno, Cal.	13.5	2	15.5	18.5	17.5
San Francisco, Cal.	13	2	15	18	15.5
Reno, Nev.	16.5	4	20.5	23.5	19
Portland, Ore.	13	3	16	19	16.5
Seattle, Wash.	13	2	15	18	16.5
Spokane, Wash.	17	2	19	22	20.5
Tacoma, Wash.	13	2	15	18	16.5

S. O. LOUISIANA

Little Rock, Ark.	18	4	22	25	16
Alexandria, La.	18	2	20	23	17
Baton Rouge, La.	17	2	19	22	15.5
Lake Charles, La.	18.5	2	20.5	23.5	17
New Orleans, La.	*18.5	2	20.5	23.5	16
Shreveport, La.	17	2	19	22	16
Lafayette, La.	18	2	20	23	16.5
Bristol, Tenn.	21	3	24	27	17.5
Chattanooga, Tenn.	20.5	3	23.5	26.5	17.5
Knoxville, Tenn.	20.5	3	23.5	26.5	18
Nashville, Tenn.	18	3	21	24	18
Memphis, Tenn.	17	3	20	23	17

*Includes 1c city tax on gasoline and kerosene.

S. O. OHIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
All Ohio points	20	2	22	24	17

MAGNOLIA PETROLEUM

Muskogee, Okla.	17	3	20	23	13
Oklahoma City	15	3	18	21	15
Tulsa, Okla.	17	3	20	23	15
Fort Smith, Ark.	18	4	22	25	15.5
Little Rock, Ark.	18	4	22	25	15.5
Texarkana, Ark.	20	4	*24	*24	16
Dallas, Tex.	16	1	**17	17	13
El Paso, Tex.	20	1	**21	21	16
Fort Worth, Tex.	16	1	**17	17	13
Houston, Tex.	20	1	**21	21	15
San Antonio, Tex.	18	1	**19	19	15

*Within city of Texarkana, Ark., the state tax on gasoline is 1c per gal. conforming with the Texas state tax. In Texarkana district outside of the city the 4c state tax applies.

**Magnolia is maintaining only one price schedule in Texas—its retail schedule. This is in keeping with its contract, effective May 5, which allows the dealer 3c off the retail price.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changed)

	Oleum Spirits	V.M.& P Naphtha	Cleaner Naphtha
Chicago	21	23	21
Detroit	22.2	24.7	22.7
Kansas City	21.2	23.2	21.2
Milwaukee	21.2	*25.7	*23.7
Minneapolis	*24.5	*27	*25
St. Louis	20.4	22.9	22.2
New York	...	22	....

*Includes 2c state tax.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Toronto	26.5	3	29.5	33	24
Ottawa	26.5	3	29.5	33	24
Cochrane	31.5	3	34.5	40	29
Ft. William	28.5	3	31.5	36	26.5

MANITOBA

Winnipeg	29.5	3	32.5	36	26.5

SASKATCHEWAN

Regina	32.5	0	32.5	37	29.5

ALBERTA

Edmonton	31.5	2	33.5	37	28.5
Calgary	29.5	2	31.5	35	26.5

BRITISH COLUMBIA

Vancouver	23	3	26	30	23

QUEBEC

Montreal	26.5	3	29.5	33	24
Quebec City	28.5	3	31.5	35	26
Three Rivers	28.5	3	31.5	35	26

NEW BRUNSWICK

St. John	29.5	3	32.5	36	27
Moncton	29.5	3	32.5	36	27.5

NOVA SCOTIA

Halifax	29.5	3	32.5	36	27
Sydney	31.5	3	34.5	37	27.5

PRINCE EDWARD ISLAND

Charlottetown	29.5	3	32.5	36	27

Note: In districts surrounding these points 1c additional is added to city price.

Export Trade Inactive as Buyers Expect Further Price Cuts

By Special Correspondent
NEW YORK, Oct. 11.

EXPORT BUYERS as a rule appear to be waiting further gasoline and kerosene price reductions. Not one bulk cargo sale was reported, nor were there any important negotiations. The recent cuts in gasoline and kerosene prices instead of stimulating foreign demand, have brought about a dearth of orders from buyers abroad who feel that the bottom has not been reached. California gasoline is being offered freely all along the Atlantic Seaboard at low prices and this coupled with the decreasing consumption and accumulating supplies has tended to depress the market. Kerosene was barely steady. Gas oil was a trifle lower in the Gulf markets.

Export Gasoline—New York

Export demand for gasoline was disappointing. Leading refiners showed more disposition to shade prices. Most big refiners were quoting U. S. Motor at 12 cents a gallon at the refineries but it was persistently rumored that on a firm bid 11¾ cents could have been done. Considerable California gasoline has arrived here of late and cargo lots are offered at 11½ cents a gallon, f.o.b Atlantic Seaboard.

Cased gasoline was also more or less neglected. A sale was reported of 20,000 cases of U. S. Motor and 64-66 gravity, 375 end point for November shipment to the Near East but details were withheld.

Export Gasoline—Gulf Ports

With European buyers awaiting lower prices and domestic buying on the wane the Gulf export markets were dull and weak. Prices as a rule were a trifle below the previous week's levels. U. S. Motor in bulk was quoted at 11 to 11¼ cents a gallon; 60-62, 400 e.p. at 11¾ cents; 61-63, 390 e.p. at 12 cents, and 64-66, 375 e.p. at 12¼ to 12½ cents a gallon.

Competition among the Gulf refiners was keen. There was a tendency to shade prices. An inquiry was received from a United Kingdom buyer for 50,000 barrels of U. S. Motor and 64-66 gasoline, and prime and water white kerosene for November shipment. This, however, failed to materialize. Cased gasoline demand was slightly more spirited and U. S. Motor was fairly well maintained at $2.10 a case and 64-66 at $2.30 a case, in cargo lots.

Domestic Gasoline—New York

Domestic demand for gasoline was disappointing last week and no sales worth mentioning came to light. Jobbers are holding off for lower prices. The big consumers are fairly well covered and prices showed a sagging tendency. California gasoline is offered freely at 12 cents a gallon in tank cars but it was persistently rumored that on a firm bid 11¾ cents a gallon could have been done. The cost of laying California gasoline down here in cargo lots was figured at 11¼ to 11½ cents a gallon.

Domestic Gasoline—New Orleans

The domestic gasoline market in the Gulf region was dull throughout the week. U. S. Motor was offered freely at 11¼ cents a gallon in tank cars at refineries but jobbers showed little interest. Most Independent marketers appear to be fairly well covered for the present and are buying sparingly. Weather conditions have been a shade better and consumption was a trifle larger last week.

Export Kerosene—New York

Although European kerosene consumption is steadily soaring, no sizeable buying orders appeared last week. Foreign buyers however, particularly those with French connections, are in close touch with the market and are expected to resume buying operations on a large scale soon. Refiners over here are not depressed over the slump in kerosene export business, but are awaiting the foreign demand which they feel sure will spring up soon. As a rule prices were steady and water white is quoted at 10¾ cents a gallon refinery while prime white is held at 10½ cents a gallon, refinery. Cased kerosene was quiet and unchanged.

Export Kerosene—Gulf Ports

Foreign demand for kerosene has failed to improve and refiners are anxious for new business. Water white was held at 9¼ cents a gallon and prime white at 8 cents a gallon, in cargo lots. No European buying of consequence developed although most of the oil men returning from abroad report Continental kerosene stocks are low. Apparently Russia is not in a position to take care of as much of the European business as was generally supposed.

Cased kerosene demand was more active. A large Independent refiner is reported to have booked an order for 40,000 cases of prime and water white kerosene for November shipment to Australia. Prime white was quoted at $1.75 a case and water white at $1.85 a case, in cargo lots, a decline of 10 cents a case from the previous week's price.

Domestic Kerosene

Domestic consumption of kerosene is increasing. Although the Gulf markets for bulk kerosene have been a little easner, the New York market has been firmly established at 10¾ cents a gallon for water white at the refineries and 11¼ cents in tank cars delivered to the trade while prime white was quoted at 10½ cents at refineries and 11½ cents delivered in tank cars. In the Gulf section water white was quoted at 9¼ cents a gallon at the refineries.

Gas Oil—New York

The new York gas oil market was firm. Export demand for gas oil has been virtually at a standstill but domestic consumption is increasing and 36-40 in bulk at the refineries was well maintained at 6¾ cents a gallon while 28-34 was quoted at 6 cents a gallon. No bulk cargo sales have been reported in several weeks.

Gas Oil—Gulf Ports

The Gulf gas oil markets were weaker. Slump in export buying and the decrease in cracking, have allowed stocks to pile up and 26-28 red transparent was offered more freely at 5¼ cents a gallon with unconfirmed reports current that on a bid 5 cents might have been done. There was an inquiry from Scandinavia for 28,000 barrels of light gas oil for November shipment but this did not develop.

Bunker Oil—New York

Demand for Bunker C oil was more active last week following the announcement by the Standard Oil Co. of the 10-cent reduction to $1.65 a barrel at New York harbor refineries. There is a heavy contract movement and New York factors feel that the market is in a stronger position than for some time. Export demand has been disappointing but this has been more than made up for by the increased domestic consumption. Diesel oil is firm at $2.50 a barrel at refineries.

Bunker Oil—Gulf Ports

At the close of the week grade C bunker oil in cargoes f.o.b New Orleans was offered at $1.35 a barrel. For bunkering purposes the price as at $1.60 a barrel. At Tampico grade C in cargo lots was nominal. For bunkering purposes the price was nominally quoted at $1.55 a barrel f.o.b Tampico, taxes included. Heavy Panuco crude oil was a trifle easier at $1.15 a barrel at Tampico, taxes to be added.

Waxes—New York

The market for paraffin waxes was virtually unchanged from the preced-

ing week. The demand from abroad is still small. None of the big foreign consumers appears interested in the prices prevailing here although it is reported two refiners are making heavy consignment shipments to the Continent. Competition abroad is still keen. White crude scale 122-124 A.m.p. is offered a little more freely at 4.95 cents a pound.

Waxes—Gulf Ports

The Gulf wax market was unusually quiet. British buyers appeared content with purchasing as needed. For 124-126 A.m.p. white crude scale at New Orleans the price was 5 cents a pound and 124-126 A.m.p. semi-refined was 5.10 cents a pound. Fully refined waxes were neglected.

Gas Oil—New York

Export demand for gas oil continued to be disappointing but domestic buying has been on a larger scale and 36-40 was well maintained at 6¾ cents a gallon; 28-34 was 6 cents a gallon. Buyers were still operating on a small scale but are showing more interest in large quantities for November-December delivery. It was rumored that one of the leading refiners had booked a cargo of 40,000 barrels of 36-40 gas oil for November shipment to Scandinavia but details and confirmation were lacking.

Gas Oil—Gulf Ports

The demand for gas oil has looked up a little but is mainly for domestic consumption. European inquiries have been more numerous and a leading Independent refiner is reported to have booked an order for 25,000 barrels of 26-28 red oil at around 5⅜ cents a gallon. Most refiners are asking around 5½ cents a gallon for this oil. Domestic demand has improved slightly.

Petrolatums

Snow white petrolatum has shown little activity. Demand has been disappointing. Lily white is moving a little more freely. Medicinal oils were dull and unchanged.

Prairie Shipments Are At Higher Rate

TULSA, Oct. 8.—Shipments of the Prairie Pipe Line Co. during September totaled 3,906,979 barrels, a decrease of 98,506 barrels as compared with the report for August. This decrease was brought about, however, by the fact that September is one day shorter than August, for the daily average during September was 130,233 barrels, an increase of 1024 barrels.

Shipments of the Prairie Pipe Line Co. since the beginning of the current year have been as follows:

Month	Shipments	Daily Average
January	4,187,390	135,077
February	4,071,405	145,407
March	4,588,038	148,001
April	4,332,972	144,432
May	4,542,260	146,525
June	4,215,416	140,514
July	4,234,294	136,590
August	4,005,485	129,209
September	3,906,979	130,233

Complete Export Markets

New York Export Market

GASOLINE	Oct. 11	Oct. 4
U. S. Motor Tank cars Ref.	-12	-12
U. S. Motor cases	27.90	-28.40
California grade U. S. Motor F. O. B. N. Y. Cargoes	11½	-11½
KEROSENE		
43-45-1/● W.W.Tank cars Ref.	10¾	-10¾
43-45-150 W.W.Cases	19 65	-20.15
42-44-110 S.W.Cases	19.15	-19.65
GAS OIL		
36-40, Bulk Refinery	-06¾	-06¾
28-34, Bulk Refinery	-06	-06
MEXICAN BUNKER OIL		
Grade C, f. o. b. ref. Bulk	1.65-1.75	1.65- 1.75
Diesel Oil f. o. b. ref. Bulk	-2.50	- 2.50

LUBRICATING OILS

The following prices are cooperage basi f. o. b. New York, products being manufactured by inland refineries.

CYLINDER OILS (Bbls.) 1 inch Immersion Test; All Penna. Products	
Filtered D 600	28 -29
Filtered E 600	27 -27
Unfiltered 600 s. r.	19 -19
Unfiltered 650 s. r.	25 -25
600 flash s. r.	27 -27
630 Flash	36 -36

RED PARAFFIN (Bbls.) (Viscosity at 70)		
300 vis.	No. 5 color	21 -21
250 vis.	No. 5 color	20 -20
High Viscosity	No. 5 color	25 -25

NEUTRAL OILS (Bbls.) (Viscosity at 70)		
200 vis.at F.Pale	No. 3 color	-31 -31
180 Pale	No. 3 color	-29 -29
150 Pale	No. 3 color	-24½ -24½

BLACK OIL (Bbls.)	
25-30 cold test	13½ -13½
15 cold test	14½ -14½

MEDICINAL OILS
(Includes Price of Drums)
(Penna. Stocks)

	Oct. 11	Oct. 4
Domestic 875-885 s. g.	- .85	- .85
Domestic 865-.870 s. g.	.75- .80	.75- .80
Russian 885-.890 s. g. 325-330 vis.	1.10-1.25	1.10-1.25

WAXES

(Penna. Stocks)
(F. A. S. Carload Lots)

WHITE CRUDE SCALE		
122-124 A. m. p.	-4.90	-4.90
124-126 A. m. p.	-.05	-.05
MATCH		
105-108 A. m. p.	-06	-06
FULLY REFINED		
120-122 A. m. p.	-05¾	-05¾
123-125 A. m. p. Philadelphia	-05¾	-05¾
125-127 A. m. p.	-05¾	-05¾
128-130 A. m. p.	-06	-06
130-132 A. m. p.	-06¼	-06¼
133-135 A. m. p.	-06¾	-06¾
135-137 A. m. p.	-06¾	-06¾
YELLOW CRUDE SCALE		
124-126 A. m. p.	-05	-05

PETROLATUMS
(Penna. Stocks)
Per Pound

Dark Green	02	02
Veterinary	02¾	02¾
Light Amber	03¾	03¾
Dark Amber	03½	03½
Cream	06	06
Lily White	07¾	07¾
Snow White	08¾-10	09 -10

Gulf Export Market

GASOLINE
F. O. B. Seaboard
(Shipments of 20,000 Bbls. and over)

	Oct. 11	Oct. 4
U. S. Motor, Bulk	11¼	11¼-.11¼
60-62 400 e. p. Bulk	11¾	-.12
61-63-390 e. p. Bulk	12	-.12¼
64-66 375 e. p. Bulk	12¾	-.12¾
U. S. Motor, Cases (cargo lots	2.10	2.10
64-66. Cases (cargo lots)	2.30	2.30
KEROSENE		
Water White, 43-45 bulk	09¼	-09¼
Prime White, 41-43 bulk	08	-08¾
Water White, cases (cargo lots)	1 85	1.95
Prime White, cases (cargo lots)	1 75	1.80
DOMESTIC GAS AND BUNKER OIL		
26-28, gravity, bulk*	05¼	-05½
32 plus, bulk, Dark	05½	-05¾
Grade C. Bunker oil	1 60	-1.60
Cargoes	1 35	-1.45

*Transparent through neck of a 4 oz. bottle.

MEXICAN CRUDE AND BUNKER OILS F. O. B. Steamer Tampico		
Heavy, Taxes to be added	1.15	1.15
Grade C, Bunker oil Taxes paid...cargoes	nominal	nominal
Grade C, Bunker oil F. O. B. Tampico, For Bunkering Purposes, taxes paid	1.55	-1.55

SOUTH TEXAS
(Viscosity at 100° F: cold test 0)
(Tanker, F. O. B. Houston)

*LUBRICATING OILS	Oct. 11	Oct. 4
100 Vis. No.2 Unfiltered Pale	-7½	07½
150 Vis. No.2½ Unfiltered Pale	09¼	09¼
200 Vis. No.3 Unfiltered Pale	10¼	10¼
300 Vis. No.3 Unfiltered Pale	12½	12½
500 Vis. No.3½ Unfiltered Pale	14	14
200 Vis. No.5½ Red Oil	09¾	09¾
300 Vis. No.5½ Red Oil	10¾	10¾
500 Vis. No.6 Red Oil	11½	11½
800 Vis. No.6 Red Oil	16	16

*These prices are entirely nominal owing to wide fluctuations.

Pacific Export Market

(Cargo lots quotations at seaboard .Los Angeles)

	Oct. 11	Oct. 4
Gasoline, U. S. Motor— 54°-56°	09 - 9½	09 -10
Gasoline, U. S. Motor— blends and special cuts	10 -10½	10 -10½
Gas Oil, 24°—30°B. per bbl	$1.00-1.15	$1.15
Diesel Oil, 27°B—plus per bbl	$1.00-1.15	$1.15
Bunker Oil, 14°—18°B. per bbl	$ 85-1.00	$1.00
Fuel Oil, 14°—18°B. per bbl	$1.00	$1.00
Kerosene, W. W. 38°—40° B per gal., 125-150 flash test	.05 -06	.05¾-.06½
Cased Goods		
Gasoline, U. S. Motor	$2.00-2.25	$2.25
Kerosene, W. W. 38°—40° B per case, flash test 125-150	$1.40-1.50	$1.50-1.55

N. Y. Domestic Market

The following light oil, gas and fuel oil prices are F. O. B. New York refineries, being products made from Domestic (including California) and Mexican Crudes.

	Oct. 11	Oct. 4
U. S. Motor Gasoline, Tank Cars Delivered greater N.Y.	-13	13 -13¼
U. S. Motor Gasoline, Tank Cars Bayonne	-12	12 -12¼
U. S. Motor, Tank Cars, *Atlantic Seaboard Terminals	-12	12 -12¼
Kerosene, 44 150 W. W. Tank Cars de'd greater N.Y.	.11½	-11½
Grade C Bunker f.o.b.N.Y.Ref.	1.65-1.75	1.65-1.75
Diesel Oil f.o.b. Refinery	2.50	2.50
Gas Oil, 36-40, Bulk Refinery	-06¾	-06¾
Gas Oil, 28-34 Bulk, Refinery	.06	-06

*New York, Philadelphia, Portsmouth, Va. Charleston, S. C.

Crude Oil Prices, as Posted by Major

EASTERN FIELDS
Posted by Joseph Seep Purchasing Agency

Penna. Grade Oil in New York Transit Lines (Allegheny, N. Y. District)	$3.40
Bradford District Oil in National Transit Lines (Bradford District)	3.40
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.25
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.05
Keister Grade in National Transit Lines (Butler Co.)	2.30
Gaines, Tioga Co. (Pa.)	2.85
Cabell Grade in Eureka Pipe Lines (West Virginia)	2.40
Corning Grade in Buckeye Pipe Lines (Ohio)	2.55
*Somerset Medium in Cumberland Pipe Lines (Kentucky)	2.50
*Somerset Light in Cumberland Pipe Lines (Kentucky)	2.65
Ragland Grade in Cumberland Pipe Lines (Kentucky)	1.25

*Somerset oil run prior to Oct. 1, 1923, takes price of 6 cents lower than above quotations.

Posted by Stoll Oil Refining Co.

Tinsley Bottom, Tenn. oil in Stoll lines	$2.46
Oil City, Ky. oil in Stoll lines	2.65

CENTRAL STATES FIELDS
Posted by Ohio Oil Co.

Wooster	$2.55	Illinois	$2.37
Lima	2.48	Plymouth	1.90
Waterloo	1.35	*Canadian Petrolia	2.88
Indiana	2.25	*Posted by Imperial Oil, Ltd.	
Princeton	2.37		

OKLAHOMA, KANSAS And NORTH TEXAS
Prices of Prairie Oil & Gas Co.
(In Oklahoma, Kansas, North and East Central Texas) Effective May 15, 1926.

28-28.9	$1.65	34-34.9	$2.13
29-29.9	1.73	35-35.9	2.21
30-30.9	1.81	36-36.9	2.29
31-31.9	1.89	37-37.9	2.37
32-32.9	1.97	38-38.9	2.45
33-33.9	2.05	39-39.9	2.53
40-40.9	$2.61	47-47.9	$3.17
41-41.9	2.69	48-48.9	3.25
42-42.9	2.77	49-49.9	3.33
43-43.9	2.85	50-50.9	3.41
44-44.9	2.93	51-51.9	3.49
45-45.9	3.01	52 and above	3.57
46-46.9	3.09		

The Texas Co. posted same gravity and price as Prairie.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

Humble's grades and prices same as Prairie schedule. In fields where Humble purchases crude below 28°, 8 cents less for each full degree.

Mirando, Tex	$1.25

Magnolia Petroleum Co. Prices
In Oklahoma, Kansas and North and East Central Texas

Same grades and prices as posted by Prairie, excepting that Magnolia is paying $1.30 for all oil below 28 gravity.

Corsicana heavy	$1.25

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Hutchinson and Carson Counties	$1.25

Other Fields, effective June 21:

28-28.9	$1.35	37-37.9	$1.80
29-29.9	1.40	38-38.9	1.85
30-30.9	1.45	39-39.9	1.90
31-31.9	1.50	40-40.9	1.95
32-32.9	1.55	41-41.9	2.00
33-33.9	1.60	42-42.9	2.05
34-34.9	1.65	43-43.9	2.10
35-35.9	1.70	44 and above	2.15
36-36.9	1.75		

Magnolia Petroleum Co. posted flat price of $1.25 for Hutchinson and Carson Counties on Sept. 22, and Kay County Gas Co. on Oct. 4.

HURDLE DISTRICT, TEXAS
(Crane and Upton Counties)
Kay County Gas Co.

Below 26	$ .80	31-31.9	$1.10
26-26.9	.85	32-32.9	1.15
27-27.9	.90	33-33.9	1.20
28-28.9	.95	34-34.9	1.25
29-29.9	1.00	35-35.9	1.30
30-30.9	1.05	36 and above	1.35

NORTH LOUISIANA—ARKANSAS FIELDS
***Prices of the Standard Oil Co. of Louisiana**

Caddo, below 26	$1.40
" 26-28.9	1.55
" 29-31.9	1.70
" 32-34.9	2.25
" 35-37.9	2.35
" 38 and above	2.45
Homer, below 31	1.85
" 31-32.9	2.00
" 33-34.9	2.10
" 35 and above	2.20
Haynesville, below 33	2.00
" 33 and above	2.10
El Dorado, including Lisbon, below 33	2.00
" 33-34.9	2.10
" 35-36.9	2.20
" 37 and above	2.30
Bull Bayou, 32-34.9	1.95
" 35-37.9	2.10
" 38 and above	2.25
Smackover, below 24	1.10
" 24-24.9	1.35
" 25-25.9	1.40
" 26-26.9	1.45
" 27 and above	1.50
De Soto	2.30
Crichton	2.10
Bellevue	1.40
Cotton Valley	1.20
**Urania, La	1.10
†Calion (East El Dorado)	.95

*Gulf, Louisiana Oil Refining and The Texas Co. same prices as Standard.
**Posted by Louisiana Oil Refining Corp.
†Posted by Gulf.

STEPHENS, ARKANSAS
Posted by Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

26 and above	$1.65	Below 26	$1.45

GULF COASTAL FIELDS
Posted by Humble Oil & Refining Co.

Grades A	$1.40	28-29.9	$1.65
Grades B:		30-30.9	1.70
Below 25	1.40	31-31.9	1.75
25-25.9	1.45	32-32.9	1.80
26-26.9	1.50	33-33.9	1.85
27-27.9	1.55	34-34.9	1.90
28-28.9	1.60	35 and above	1.95

Fields classified as A and B are Goose Creek, Hull, Liberty, West Columbia, Orange, Boling and Pierce Junction. All other fields are Grades A only

New Lime Pay Field Found In Fisher County, Texas

By Paul Wagner
N. P. N. Staff Writer

HOUSTON, Oct. 2

ANOTHER wildcat discovery well, located 30 miles away from nearest production in west Texas, is in course of completion by the Ideal Oil Co., in sec. 113, H&TC block 1, northern Fisher county. The well, No. 1 on the W. F. Martin farm, is estimated good for as high as 400 to 500 barrels, initial production, from lime formation at about 3350 feet.

The nearest point of earlier production is the No. 1 Winters discovery well of the Phillips Petroleum Co., near Trent, in southwestern Jones county, which came in about three weeks ago for 945 barrels, initial production, and is still holding up above 900 barrels daily. The Phillips well, about 30 miles southeast of the Ideal-Martin discovery, produces from sandy lime at total depth of 2517 feet.

Almost due east of the Ideal-Martin well about 50 miles is the Roeser-Pendleton development on the Cook ranch, in east central Shackelford county, where production is found at pay levels ranging from 1100 to 1400 feet. The Roeser-Pendleton area recently has been producing between 6000 and 7000 barrels of high grade oil daily.

There is no production north or west of the Ideal-Martin discovery closer than the fields of the Texas Panhandle and southeastern New Mexico, fully 200 miles in either direction.

Production Found in Lime

DETAILS were not available at the end of the week to indicate the producing horizon from which the oil in the Ideal-Martin discovery is coming, but its lime character at the depth found is inferentially similar to the pay level of Woodson development in southeastern Throckmorton county, about 65 miles northeast. There the sandy lime of the Cisco series beds is found at about 3200 feet and the Ranger lime horizon at about 3900 feet.

The producing horizon of the Phillips-Winters well in southwestern Jones county has been provisionally identified as the Cisco series lime, which changes its character progressively westward from the more nearly sandlike horizon productive in Shackelford, Callahan and other counties fringing the general Ranger lime region.

Nearest railroad facilities to the northern Fisher county find are provided by the Kansas City, Mexico & Orient line, which almost exclusively serves the Permian salt basin productive area to the west and southwest of San Angelo. The K. C. M. & O. cuts across the eastern one-third of Fisher county in a northeast-southwest direction, the town of Hamlin being the closest point on the main line to the new field indicated by the Ideal-Martin well.

MEDORA, ILL.—The C. L. Carter Petroleum Co. has completed its bulk station at Waterloo, Ill., and is now distributing Sinclair products in Monroe and Randolph counties. The company has its headquarters in the Carter Bldg., Medora.

Purchasers, in All Fields (in Effect, Oct. 11, 1926)

GULF COASTAL FIELDS
Prices of The Texas Co.

Grades A	$1.60	*Grades B	$1.60
‡Grades B (light crude):			
35-35.9	$2.05	38-38.9	$2.20
36-36.9	2.10	39-39.9	2.25
37-37.9	2.15	40 and above	2.30

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on oil below 35° is same as Humble's postings on Grades B.

SPINDLETOP
Humble Oil & Refining Co.

Grade A	$1.25	25-25 9	$1.30
Grades B:		26-26 9	1.35
Below 25	$1.25	27-27.9	1.40
28-28.9	$1.45	30-30.9	$1.55
29-29.9	1.50	31-31.9	1.60

ROCKY MOUNTAIN FIELDS
Prices of Ohio Oil Co. and Midwest Refining Co.

‡Salt Creek	29-29.9	$1.73
" "	30-30.9	1.81
" "	31-31.9	1.89
" "	32-32.9	1.97
" "	33-33.9	2.05
" "	34-34.9	2.13
" "	35-35.9	2.21
" "	36-36.9	2.29
" "	37 and above	2.37
Elk Basin		2.40
Grass Creek light		2.40
Big Muddy		2.25
Lance Creek		2.40
Rock Creek		2.25
‡Osage		2.40
‡Cat Creek, Mont.		2.40
Sunburst, Mont.		1.35
‡Hogback, N. Mex.		2.45
Artesia, N. Mex.		2.20

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light, and Elk Basin.

The Texas Co. buys Salt Creek and Big Muddy crude.

CALIFORNIA
Standard Oil Co. of California

Santa Maria and Ventura Posted by *Union Oil Co.

Gravity	Signal Hill Huntington Beach	Inglewood Torrance	Whittier La Habra	Newhall, Olinda-McKittrick, Kern River	Brea Canon, Richfield	Athens-Rosecrans Dominguez	Monte-bello	Coyote Hills	Santa Fe Springs	Midway-Sunset Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	$ .75	$ .85	.....	$ .85	$ .85	.....	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85
15-15.9	.87	.87	.85	.75	.87	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
16-16.9	.90	.90	.85	.75	.90	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
17-17.9	.94	.94	.85	.75	.94	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
18-18.9	.98	.98	.86	.75	.98	.....	.86	.86	.....	.75	.75	.75	.75	.85	.85
19-19.9	1.04	1.04	.87	.75	1.04	.....	.87	.87	.....	.75	.75	.75	.75	.85	.85
20-20.9	1.10	1.10	.89	.....	1.10	.....	.89	.90	.....	.82	.82	.79	.78	.90	.90
21-21.9	1.16	1.16	.91	.....	1.16	.....	.91	.98	.....	.90	.90	.86	.81	.97	.97
22-22.9	1.22	1.22	.94	.....	1.22	.....	.94	1.06	.....	1.00	1.00	.93	.85	1.04	1.04
23-23.9	1.28	1.28	.....	.....	1.28	.....	.97	1.14	.....	1.11	1.11	1.00	.89	1.11	1.11
24-24.9	1.34	1.34	.....	.....	1.34	$1.34	1.01	1.22	$1.02	1.22	1.22	1.07	.93	1.18	1.18
25-25 9	1.40	1.40	.....	.....	1.40	1.40	1.05	1.30	1.08	1.33	1.33	1.14	.97	1.25	1.25
26-26.9	1.46	1.46	.....	.....	1.46	1.46	1.09	1.38	1.16	1.44	1.44	1.21	1.01	1.32	1.32
27-27.9	1.52	1.52	.....	.....	1.52	1.52	1.13	1.46	1.24	1.55	1.55	1.28	1.05	1.39	1.39
28-28.9	1.58	1.58	.....	.....	1.58	1.58	1.17	1.54	1.32	1.66	1.66	1.35	.....	1.46	1.46
29-29.9	1.64	.....	.....	.....	1.64	1.64	1.21	1.62	1.40	1.77	1.77	1.42	.....	1.53	1.53
30-30.9	1.70	.....	.....	.....	1.70	1.70	1.25	1.70	1.48	1.88	1.88	1.49	.....	1.60	1.60
31-31.9	1.76	.....	.....	.....	.....	1.76	.....	.....	1.60	1.99	1.99	1.56	.....	.....	1.67
32-32.9	1.84	.....	.....	.....	.....	1.84	.....	.....	1.72	2.10	2.10	1.63	.....	.....	1.73
33-33.9	.....	.....	.....	.....	.....	1.92	.....	.....	1.84	2.21	2.21	1.70	.....	.....	1.79
34-34.9	.....	.....	.....	.....	.....	2.00	.....	.....	1.96	.....	2.32	1.77	.....	.....	1.85
35-35.9	.....	.....	.....	.....	.....	2.08	.....	.....	2.08	.....	.....	1.84	.....	.....	1.92
36-36.9	.....	.....	.....	.....	.....	2.16	.....	.....	2.16	.....	.....	.....	.....	.....	.....
37-37.9	.....	.....	.....	.....	.....	2.24	.....	.....	2.24	.....	.....	.....	.....	.....	.....
38-38.9	.....	.....	.....	.....	.....	2.34	.....	.....	2.34	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	2.44	.....	.....	2.44	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	2.54	.....	.....	.....	.....	.....	.....	.....	.....	.....
41-41.9	.....	.....	.....	.....	.....	2.64	.....	.....	.....	.....	.....	.....	.....	.....	.....
42-42.9	.....	.....	.....	.....	.....	2.74	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Union Oil Co. also purchases Long Beach crude and is maintaining the same gravity and price schedule in t hat field as the Standard maintains in Signal Hill and Huntington Beach fields. The Union also buys and pays the same prices as the Standard in the Rosecrans-Do minguez fields, on gravities ranging from 14 degrees to and including 24.9 degrees and in Santa Fe Springs, on gravities ranging from 20 to and including 25.9 degrees.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are the average market prices for the week on materials used by refiners and compounders f. o. b. shipping point as effective this date.

Refiners' Supplies

	Oct. 11	Oct. 4
Soda Ash light 58% bags.cwt.	$1.38	$1.38
Silicate of Soda 60 deg. drums.....cwt.	$1.65	$1.65
Sal Soda wks.	.90- 1 10	.90- 1.10
Caustic Soda 70% solid..cwt.	- 3.10	- 3.10
Chloride of Lime.....cwt. works	- 2.00	- 2.00
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	10.50-11.00	10.50-11.00
Liquid Chlorine tank cars works.....lb.	- .04	- .04

Compounders' Supplies (Open Market)

Vegetable Oils—		
Linseed carloads spot.....lb.	11	11
Oct.-Dec.	11	11
Tanks, spot	11.2	11.2
Boiled carloads spot.....lb.	10.6	10.6
*Soya Bean spot, Bbls....lb.	14¾	14¾
Castor Oil—		
No. 1 Carlots, Bbls.....	-.12¼	-.12½
No. 3 Carlots, Bbls.....	-.11¾	-.12
Animal Oils—		
English Degras.....lb.	.05½	-.05½
Domestic Degras, bbls., carloads.....lb.	-.04¾	-.04¾
*Horse.....lb.	-.08½	-.08½
Oleic Acid—		
Dist. Bbls.....lb.	.09¾-.10¼	.09¾-.10¼
Saponified Bbls.....lb.	.10 -.10½	.10 -.10½
Lard Oils—		
Prime Winter Strained. to	1½ffa.40/45c.t.lb.	.16⅞ .16¾
Extra Winter Strained. 2 to	4½ffa.40/45c.t.lb.	.13¼ .13¼
Extra 4 to	5 ffa.40/45c.t.lb.	.12¾ .12¾
Extra No.1 7 to	10 ffa.40/50c.t.lb.	.11¾ .11¾
No. 1 15 to	18 ffa.40/45c.t.lb.	.11½ .11½
No. 2 22 to	23 ffa.40/45c.t.lb.	.11¼ .11¼
Prime Edible Tallow under	1⅛ffa. 40/45c.t.N.Y.....lb.	-.09½ -.10½
Tallow acidless.....lb.	-.11½	-.11½
Lard Stearine.....lb.	-.17¼	-.17¾
Oleo Stearine.....lb.	-.12½	-.12¾
Neatsfoot Oil—		
Pure.....bbls.-lb.	.15¾	.15¾
Extra.....do...lb.	.11¾	.11¾
No. 1.....bbls.-lb.	.11½	.11½
Cold pressed.....lb.	.18¾	.18¾
Fish Oils—		
Menhaden Oil		
Light pressed.....gal.	-.65	-.65
White.....gal.	-.70	-.70
Yellow bleached.....gal.	-.68	-.68
*Herring tank cars coast.....gal.	-.47	-.47
Whale, extra winter bleached.....gal.	.82	-.82
Seal.....gal.		nominal
Naval Stores—		
Turpentine, N. Y.....gal.	.91½	.93
Turpentine†.....gal.	.85½	86
Rosin, B. N. Y.....bbl.	14.00	14.50
Rosin, F. N. Y.....bbl.	14.25	15.40
Rosin, B†.....bbl.	12.25	12.50
Rosin, F†.....bbl.	12.25	13.85
Rosin Oil 1st run.....gal.	.85	.85
Rosin Oil 2nd run.....gal.	.90	.90
Pine Tar—		
Kiln Burnt.....bbl.	14.50	14.50
Retort.....bbl.	18.50	18.50

†Savannah, Ga. market.
*Nominal.

Alcohol—Denatured		
Formula 5		
Bbls.....gal.	-.40	-.39
Drums.....gal.	-.33	-.32

OIL STOCKS AND FINANCES

National Petroleum News

Marland Oil Spends $52,200,000 In 2¾ Years on Property

NEW YORK, Oct. 9.

MARLAND OIL Co. from Jan. 1, 1924, to Sept. 30, 1926, spent $68,450,000 in acquisition and development of oil properties and retiring bonds and banks loans, E. W. Marland, president has informed stockholders in a letter calling a special meeting for Nov. 1 to vote on a proposed 20 per cent increase in the company's capital stock.

Of that amount $12,300,000 was spent on refinery, natural gasoline plants, pipe lines, and marketing facilities; $39,900,000 on new leases and development of leases but this sum does not include $7,421,000 currently charged against earnings for geological and investigation expenses in connection with lease acquisitions, and $16,250,000 in the retirement of debt and bank loans as of Dec. 1, 1923.

Of the money spent $25,200,000 was received from the sale of stock, of which amount $22,400,000 was from the sale of treasury stock to J. P. Morgan & Co. and $2,800,000 from the exercise of stock warrants which were attached to the Marland bonds; $5,775,000 from reserves against refinery, casinghead, pipe lines and marketing properties; $15,925,000 from reserves against leases and development of leases; $18,350,000 from surplus earnings, and $3,200,000 from miscellaneous sources.

Stockholders of record Oct. 16 will be entitled to vote on the proposed increase in no par capital shares from 2,000,000 to 2,400,000. If the proposal is ratified it is planned that subscription rights of 20 per cent shall be granted to holders of record of some date between Nov. 15 and Dec. 1, the exact date to be announced later. Payment for the new stock is to be made in full on Dec. 9 and $50 a share or in two installments of $25 each, one on Dec. 9 and the other on Dec. 30. When payment is made full transferable receipts are to be issued. The new stock is to receive all dividends payable after Jan. 1.

In his letter to stockholders, Mr. Marland said the company's proven oil reserves are estimated to be at least 260,000,000 barrels and that at least 150,000,000 barrels more is expected to be produced from unproven leases. The company at present has 50,000 barrels daily production, he said. The Marland refinery has capacity for 25,000 barrels daily and the pipe lines capacity for 75,000 barrels.

Proceeds from the sale of the new stock will increase the company working capital by $19,000,000. The consolidated balance sheet of Marland and subsidiaries as of Sept. 30 but after giving effect to the proposed financing and that of Dec. 31, 1925, compare:

ASSETS

	1926	‡1925
*Fixed assets	$75,274,980	$62,170,441
Invest and adv.	12,387,160	12,708,450
Cash	9,593,376	13,881,802
Bills and accts rec	6,096,781	7,359,917
Crude oil	10,175,337	3,311,293
Refin prods	5,161,776	3,507,049
Mat and sup	3,077,830	1,745,044
Misc accd items	50,063	182,695
Deferred items	1,644,751	1,629,712
Total	$123,462,054	$106,496,403

LIABILITIES

Capital stock and surplus	†116,856,158	$94,670,125
Minority interest	22,291	139,466
Accts payable	5,708,130	2,563,413
Misc accrued items	361,891	437,146
Gold bonds	.....	7,798,000
Federal tax res	513,584	.....
Equipment trust ctfs	.....	507,000
Contingent res	.....	381,250
Total	$123,462,054	$106,496,403

*After depreciation and depletion.
†Represented by 2,311,316 no par shares.
‡Actual.

Skelly Oil Co.—Net earnings in August after depreciation and depletion but before federal taxes amounted to $644,257, compared with $77,189 in August, 1925. This August was best month in company's existence.

Cleveland Stock Market

Oct. 8

	Par	Bid	Asked	Last Sale
Canfield Oil Co.	$100	108	.....	105
do pfd.	100	.....	.....	95
Fred G. Clark Co.	10	3½	4½	4
National Refining Co.	25	39	42	39½
do pfd.	100	133	.....	133
Paragon Refining Co.	25	7⅝	8	7¼
do pfd.	100	.....	82	80

xEx-dividend

Oil Dividends

	Amt.	Payable	Stock of Record
Skelly Oil q	50c	Dec. 15	Nov. 15
Tide Water pfd. q	$1.25	Nov. 15	Nov. 1
North Central Texas q	15c	Dec. 1	Nov. 10
Union of Calif. q	50c	Nov. 10	Oct. 16
United Oil q	75c	Oct. 15	Oct. 5

Simms Notes to Cover Expansion Costs

NEW YORK, Oct. 11.—Simms Petroleum Co. directors have authorized issuance of $3,431,335 3-year 6 per cent convertible notes. Stockholders have the right to subscribe for $500 par value of notes for each 100 shares of $10 capital stock held. The issue has been underwritten by Hemphill, Noyes & Co. and Luke, Banks & Weeks. The notes are convertible for two years into stock at $25 a share. The stock has recently been selling around $18 a share on the New York Stock Exchange.

Money derived from the loan will be used to reimburse the Simms treasury for capital expenditure of the last few years, although the amount to be borrowed will be less than one-fourth of the amounts put into the expansion and development of Simms properties, it is said.

Since the beginning of 1922 until the end of July, 1926, net income of Simms has amounted to $15,871,000 of which only $1,370,000 has been paid stockholders in dividends. The balance of $14,501,000 has been reinvested among the items being the former Clayton refinery at Dallas, a casinghead plant at Smackover and a refinery now being constructed at the latter place, in addition to expenditures on producing properties.

NORTH TARRYTOWN, N. Y.—The Ward Oil Co., Inc., sole distributor in Westchester and Putnam counties, N. Y. and in southwest Connecticut of Marland Super motor oils, is erecting a 60,000 gallon steel storage tank at Ossining, N. Y. Anti-knock gasoline, fuel oil, premium kerosene and motor oils, will be handled. A steel warehouse has been installed for lube oil and barreled goods storage and two trucks are ready for deliveries, according to William A. Ward, president.

Oklahoma Natural Gas Co.—Holders of certificates of deposit in the old company will receive in addition to the cash distribution of $10 a share made, $21.86 par value of 6 per cent first mortgage bonds, and about 64 cents cash for each share and one share of new common stock for each 22 shares of old held. Date for distribution has not been set.

Pandem Oil Corp.—August operating income after expenses amounted to $51,866 compared with $10,366 in July.

Transactions In Oil Shares on New York Stock Exchange

1925 High	1925 Low	1926 High	1926 Low		Listed Capital	Par Value	Stocks	Div. Rate	Div. Last Paid	Transactions week ended Oct. 9 Sales	First	High	Low	Last	Ch'ge
.....	.....	3⅜	2¼	(sh)	713 000	N.P.	Amerada Corp	40cQ	July 30, 26	6,100	31½	31½	29½	29½	—2
79¾	48	74	47	(sh)	200 000	N.P.	American Republics	.....	.....	200	47	47	†47	47	—8
47⅛	32	59½	44¾	$	56 000 000	$25	Associated Oil	50cQ	Sept.25, 26	200	50½	50½	50½	50½	—1½
117½	95½	128⅜	97		50 000 000	100	Atlantic Refining	.....	June 16, 24	18,700	109½	100½	102	102	—9⅜
117¾	113½	120	115⅜		20 000 000	100	do pfd	$1¾Q	Aug. 2, 26	500	116¾	116½	116¾	116½	+1⅜
33½	18¾	33½	23¾		25 000 000	25	Barnsdall Corp. A	50cQ	Oct. 1, 26	20,500	27½	27⅝	25	25¾	—2
80	16	29½	23		3,713,275	25	do B	50cQ	Oct. 1, 26	700	25¾	25¾	23⅝	24	+ ½
84⅜	23⅞	38⅛	30⅜	$	45,040,125	$25	California Petroleum	50cQ	Sept. 1, 26	20,700	31¾	31¾	†30¾	30⅜	—1⅜
70	42½	94½	50		23,542,500	100	General Asphalt	.....	.....	62,400	88¼	88¼	77⅝	78	—9⅜
109	86½	140⅜	94⅞		7,416,000	100	do pfd	$1¾Q	Sept. 1, 26	2,000	124	124	119¾	120	—13
85	59	72	50½		25,000,000	100	Houston Oil	.....	.....	2,900	57¼	57¾	53¾	54	—3⅛
41¾	13½	34	19⅝	(sh)	500 000	N.P.	Independent Oil & Gas	25cQ	July 19, 26	15,500	26¼	26¼	24	24½	—1¾
14½	5½	13¾	8	$	3,204,590	$10	Indian Refining	.....	Dec. 15, 20	1,700	8⅝	8⅝	8	8	—1
12⅝	6	12½	8		4,545 860	10	do ctfs	.....	.....	1,200	9	9	8¼	8⅛	— ⅜
110	77	104	90		2,296,400	100	do pfd	.....	Dec. 15, 21	100	96	96	96	96	—4⅛
1½	¾	¾	¼		1,678,760	10	Kansas & Gulf	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	24½	19⅜	(sh)	4,000,000	N.P.	Lago Oil & Transport	.....	.....	35,600	21¾	21¾	19⅝	20	—1¾
23¾	13⅝	19⅞	12	(sh)	1,131,216	N.P.	Louisiana Oil Refining	.....	.....	15,700	15⅝	15⅝	14⅝	15⅜	— ⅜
.....	.....	97	93½	$	4,000,000	$100	do pfd	$1⅝Q	Aug. 16, 26	300	95	95½	95	95½	+ ½
35½	20¾	28⅞	16½	(sh)	330,000	N.P.	Maracaibo Oil	.....	.....	9,700	20¼	20⅜	†16¼	18	—2
60½	32⅜	63¾	49¼	(sh)	1,895 823	N.P.	Marland Oil Co	$1Q	Sept. 30, 26	66,400	56	56	52½	53¼	—2⅞
250	225	.....	.....	$	45,942,800	$100	Mexican Petroleum	$3Q	July 20, 26	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....		12,000,000	100	do pfd	$2Q	July 20 26	.....	.....	.....	.....	.....	.....
22½	29	13¾	6	(sh)	945,989	N.P.	Mexican Seaboard	.....	Nov. 15, 24	4,800	9¾	9¾	8⅛	8⅛	—1¾
38	25¾	37	27½	(sh)	1 357 800	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 23	19,400	30⅛	30⅞	29⅞	30¼	0
94½	83	100⅜	90	$	6,718 000	$100	do pfd	$1¾Q	Sept. 1, 26	400	97¾	97¾	97⅛	97⅜	—⅜
3¼	⅜	2½	1		25,415,540	10	Middle States	.....	July 1, 23	3,300	1	1⅛	1	1	— ⅛
1½	1½	1⅛	½		4,384,680	....	do ctfs	.....	.....	200	½	½	† ½	½	— ⅛
78½	51⅛	83¼	1	(sh)	3,500,000	N.P.	Pacific Oil	.....	Jan. 20, 26	8,200	1½	1½	1⅜	1⅜	— ⅛
83⅞	59⅛	76½	56⅛	$	48,307,400	$50	Pan American P. & T	$1.50Q	July 20, 26	5,200	65½	65½	62½	62¾	—3¼
84½	60⅛	78¾	56⅞		91,025,100	50	do B	$1.50Q	July 20, 26	64,100	66	66	62⅝	63	—3⅜
49¾	37⅛	56	31	(sh)	400,000	N.P.	Pan American Western B	50cQ	July 30, 26	7,500	33	33⅝	†31	31	—2¼
6¼	2¼	32	4½	(sh)	198,770	N P.	Panhandle P. & R	.....	.....	4,900	15½	15¾	14½	15⅜	— ⅞
60½	37	99¾	51	$	2,935,200	$100	do pfd	.....	July 2, 23	100	70	70	70	70	—5
47⅛	30¼	52¾	40	(sh)	2,406,692	N.P.	Phillips Petroleum	75cQ	Oct. 1, 26	91,000	49⅝	49⅞	47	47¾	—1¾
3½	1¼	1⅞	⅝	$	29,622,925	$25	Pierce Oil Corp	.....	.....	300	½	½	½	½	— ⅛
40	20¼	27⅛	12½		15,000,000	100	do pfd	.....	Feb. 1, 22	.....	.....	.....	.....	.....	.....
8¼	4½	7	2½	(sh)	2 500,000	N.P.	Pierce Petroleum	.....	.....	3,100	2⅝	2⅝	2½	2½	— ⅛
32⅝	12½	17½	11	$	11,467,850	$50	Producers & Refiners	.....	Sept.15, 23	6,700	15⅛	15⅝	14⅜	15½	+ ⅛
47⅝	27	38½	30¾		2,845,350	50	do pfd	.....	May 1, 25	300	35	35	34½	34½	—1⅛
33¾	25⅛	31	25⅜		75,959,250	25	Pure Oil Co	37½cQ	Sept. 1, 26	11,000	26¾	26⅞	26	26⅛	— ⅛
108½	103	112¾	106		13,000,000	100	do 8% pfd	$2Q	Oct. 1, 26	.....	.....	.....	.....	.....	.....
57⅜	48¼	57⅜	48½	(sh)	691,922	13.40	Royal Dutch, N. Y. shares	$1.739	Aug. 2, 26	3,400	49¾	49¾	†48½	48½	—1⅜
49	39½	48⅝	41	(sh)	93,345	£2	Shell Transport & T	$1.21	July 24, 26	.....	.....	.....	.....	.....	.....
28⅜	21⅝	30½	24	(sh)	10,000,000	N.P.	Shell Union Oil	35cQ	Sept. 30, 26	24,800	28¼	28½	27⅝	27¾	— ¼
106½	99½	114	103	$	20,000,000	$100	do pfd	$1½Q	Aug. 15, 26	2,800	107⅛	107½	107	107½	+ ½
28½	17¾	28⅝	15⅛		7,207 620	10	Simms Petroleum	50cS.A.	July 1, 26	3,800	17¾	18½	16⅝	18¾	+ ½
24⅞	17	24⅞	18	(sh)	4,489,887	N.P.	Sinclair Consolidated	.....	May 31, 24	34,500	19¾	19¾	†18	18½	—1
94⅛	78¾	99½	90	$	17 852,200	$100	do pfd	$2Q	Aug. 15, 26	700	96	96	96	96	—1⅜
32½	21¾	36⅞	26⅛		23,988 590	25	Skelly Oil Co	50cQ	Sept. 15, 26	24,800	34⅛	34⅛	32¾	32⅜	—1⅜
.....	.....	63¾	52⅝	(sh)	13,016,454	N.P.	S. O California	50cQ	Sept. 15, 26	53,100	60⅜	61⅝	59	61	+ ¾
47½	38¾	46⅜	40¼		515,109 675	25	S. O. New Jersey	25cQ	Sept. 15, 26	42,700	42⅜	42½	41¾	42	— ¼
119	116¼	119⅛	115¼		199,972,900	100	do pfd	$1¾Q	Sept. 15, 26	2,400	116¼	116¼	116	116	— ¼
43⅞	38⅛	41⅜	30⅛	(sh)	1,103,931	N P.	Sun Oil	25cQ	Sept. 15, 26	1,900	33¼	33½	32¾	33	— ⅜
6⅛	2	4¼	1	(sh)	1,121,368	N.P.	Superior Oil Corp	.....	Dec. 20, 20	10,500	2⅞	3	2¼	2⅝	— ⅜
55	42¾	57¼	48	$	164,450,000	$25	The Texas Co	75cQ	Sept. 30, 26	42,800	54⅝	54⅝	52½	52¾	—2
23⅜	10⅞	19½	12⅛		8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 23	15,300	15	15	13⅝	13¾	—1
36⅞	30¼	39¼	28	(sh)	2,137,570	N.P.	Tide Water Oil Co	37½c	Sept. 30, 26	600	29⅞	29⅞	†28	28	—1⅞
101	99	103	89¼	$	20,672,900	$100	do 5% pfd	$1.25Q	Aug. 15, 26	500	90	90¼	†89¼	89¼	—1
5⅞	3½	5½	3	(sh)	3,742,029	N.P.	Transcontinental Oil	.....	.....	23,300	4	4⅜	3¼	3⅜	— ¼
43⅜	33	58⅜	37½	$	40,480,800	$25	Union Oil of California	50cQ	Aug. 10, 26	32,900	54⅛	54½	52	52¼	—1¾
134	96½	120	80		24,423,300	100	Union Tank Car Co	$1¼Q	Sept. 1, 26	5,300	117¾	118¼	115	118	+ ¾
117½	113¼	118	113¼		12,000,000	100	do pfd	$1¾Q	Sept 1, 26	800	115⅜	115¾	115¼	115½	0
31¾	25½	29¼	25⅛	(sh)	490.000	N.P.	White Eagle Oil & Refining	50cQ	July 20, 26	2,000	25¾	26⅞	25¾	26⅞	+1¼

*New High †New Low xEx-dividend Total Sales 840,500

Pittsburgh Stock Exchange

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Oct. 8 Sales	First	High	Low	Last	Ch'ge
.....	.....	6¾	6¾	N.P.	Andes Petroleum	.....	.....	.....	.....	.....	.....
8¾	5¼	8½	5¾	$10	Arkansas Nat. Gas	9,002	7⅜	7⅞	7¼	7⅝	— ⅜
.....	.....	97½	79¾	100	Columbia Gas (w.i.)	.....	.....	.....	.....	.....	.....
.....	.....	96¼	95	$100	Col. Gas& El.pfd w.i.	.....	.....	.....	.....	.....	.....
18	14½	17	12½	$10	Devonian Oil	460	15	16¼	15	16¼	+ ¼
112⅝	105⅜	115⅞	112	$100	Duquesne Lt. 7% pfd	50	115	115⅜	115	115⅜	+ ⅜
.....	.....	10	5½	N.P.	Houston Gulf Gas	850	6	6¼	6	6	0
.....	.....	45¾	30	25	Lone Star Gas Corp	15,895	41⅞	*45¾	41⅞	44¼	+2½
87¼	31	44	33¾	25	Ohio Fuel Corp	2,010	43½	44	43	43	— ½
.....	.....	44	42	....	† do ctfs of deposit	3,189	43½	*44	43	43	— ½
.....	.....	5½	5	....	Ohio Oil & Gas	.....	.....	.....	.....	.....	.....
84	26	84	28	25	Oklahoma Nat. Gas	.....	.....	.....	.....	.....	.....
.....	.....	20¼	19¼	....	do cfts of deposit	2,948	20	20¼	19½	19⅝	— ⅜
8¾	5	5⅜	3⅜	5	Pittsburgh O. & G	100	3½	3½	3½	3½	0
9⅝	6	10	8	10	Salt Creek Cons	400	8¼	8¼	8¼	8¼	+ ¼
13¾	8¼	23⅝	8	10	Tidal Osage	6,070	18¾	22	18¾	22	+3½
.....	.....	42½	40¾	N.P.	Waverly Oil Wks. "A"	175	41⅜	41⅜	41¼	41¼	— ½

Pittsburgh Curb Market

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Oct. 8 Sales	First	High	Low	Last	Ch'ge
2½	.60	3⅜	2½	$ 5	Colombia Synd	.....	.....	.....	.....	.....	.....
.60	.15	.15	.15	5	Duquesne Oil	.....	.....	.....	.....	.....	.....
9	5½	.....	.....	10	Forest Oil	.....	.....	.....	.....	.....	.....
92⅜	64	91½	85	25	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
.....	.....	79	79	100	Houston Gulf pfd	.....	.....	.....	.....	.....	.....
12½	8¾	12	7¾	N.P.	Leonard Oil & Dvlp	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	....	LoneStar rights (w.i.)	.....	.....	.....	.....	.....	.....
.....	.....	1¼	1¼	N.P.	Mountain & Gulf	.....	.....	.....	.....	.....	.....
.....	.....	30¼	29	....	Oklahoma Gas	231	30	30	30	30	0
.47	.20	.42	.15	10	Omar O. & G	.....	.....	.....	.....	.....	.....
.....	.....	2	1¾	5	Pittsburgh Oil Dev	.....	.....	.....	.....	.....	.....
27½	25	33½	26	10	Plymouth Oil	.....	.....	.....	.....	.....	.....
7	3	5½	3	5	States Oil	.....	.....	.....	.....	.....	.....
4	1¾	3½	2	$ 1	Texon Oil & Land	4,050	2¼	2¼	2⅛	2⅛	— ⅛
11	9	20	8	10	TidalOsage(non-voting)	....	.....	.....	.....	.....	.....

*New High †New Low xEx Dividend ‡Ex-Rights

NEW YORK CURB BONDS

Week Ending Oct. 8

	High	Low	Last	Ch'ge
Cities Serv. 6s '66	94⅝	94⅛	94⅝	+ ⅜
Cities Serv. 7s "D" '66	113⅜	112⅝	113⅜	+1⅜
Cities Serv. 8s "E" '66	119¼	119¼	119¼	0
Galena S. O. 7s '30	92¼	92	92	—1
General Pet. 6s '28	101½	101¼	101⅜	— ⅜
Gulf Oil 5s '37	100⅝	99⅞	100⅜	+ ⅜
Gulf Oil 5½s '28	101	101	101	— ¼
Indepen. Oil 6½s '31	97¾	97	97	— ½
Pan Amer. Pet. 6s '40	100	99⅜	99⅜	— ⅜
Pennok Oil 6s '27	100	100	100	0
Pure Oil 6½s '33	103½	103¼	103¼	— ¼
S O N Y 6½s '33	105⅜	105	105	— ⅜
Sun Oil 5½s '39	99⅜	99	99	0
Tidal Osage 7s '31	103½	103½	103½	0
Trans. Cont. Oil 7s '30	97½	97	97½	+1¼
Valvoline 7s '37	105	105	105	0

NEW YORK BONDS

Week Ending Oct. 8

	High	Low	Last	Ch'ge
Amer. Rep. Dub. 6s	99½	99	99	— ½
Associated Oil gold 6s	102⅞	102½	102½	+ ⅜
Atlantic Refg. deb 5s	101½	100	100	—1
Barnsdall Corp. 6s	98	96½	96½	—1½
Cal. Petrol. sf 6½s	104	103¾	104	0
Empire Gas & Fuel 7½s	103½	103¼	103⅜	— ⅛
Empire Gas & Fuel 6½s	96⅞	96½	96⅞	+ ⅜
Gen. Asphalt 6s	107½	106⅝	106⅝	— ⅞
Gen. Petroleum 5s	99⅞	99¾	99⅞	+ ⅛
Humble Oil & Refg. 5½s	102	101½	101½	— ½
Mid-Cont. Pet. 6½s	104¾	104¾	104¾	— ⅛
Pan-Amer. P & T 7s	105⅛	105⅛	105⅛	0
Pan-Amer. P & T 6s	106¼	104¾	104¾	—2⅛
Pierce Oil deb 8s	100⅛	100⅛	100⅛	0
Prod. & Refnrs. 8s	111	111	111	0
Sinclair Con. Oil Col. 7s	97¾	97½	97½	0
Sinclair Con. Oil Con. 6½s	91⅞	91⅜	91⅞	— ⅛
Sinclair Con. Oil 6s	101½	100½	100½	— ½
Sinclair Crude Oil 6s	100¾	100½	100¾	— ⅛
Sinclair Pipe Line sf 5s	93	92¼	92⅜	+ ⅛
Superior Oil 7s	96¼	96⅛	96⅛	0
Union Oil of Cal. 6s-A	107¼	106⅞	107¼	0
Union Oil of Cal. 5s-B	101⅜	101⅜	101⅜	0
Union Oil of Cal. 5s-C	98⅜	97¼	97⅜	+ ¼

Standard Oil Stock Traded in New York Curb Market

1925 High	1925 Low	1926 High	1926 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Oct. 8 Sales	First	High	Low	Last	Ch'ge
26⅜	17¼	19¾	16⅜	£ 4,000,000	£1	Anglo American	60¾cS.A.	May 27,26	1,600	18⅛	18¼	17¾	17¾	—5
.....	.....	18⅞	16½	.....	£1	do ctfsnon votg	.....	.....	1,500	17⅜	17⅜	17½	17½	— ½
4¼	1⅜	2¼	1⅛ (sh)	500,000	N.P.	Atlanti c Lobos	.....	.....	400	1⅜	1½	1⅜	1½	+ ⅛
12¾	3	5	3½	$ 10,000,000	$10	do pfd	.....	.....	.....	.....	.....	.....	.....	.....
240	205	301	226	1,000,000	100	Borne Scrymser	$4S.A.	Oct. 15,26	.....	.....	.....	.....	.....	.....
72	53½	59½	44¾	10,000,000	50	Buckeye Pipe Line	$1Q	Sept. 15,26	450	46	46	†44¾	44¾	—1½
74	48½	75¼	65	3,000,000	25	Chesebrough Mfg	75cQ	Sept. 30,26	.....	.....	.....	.....	.....	.....
115	110	.....	.....	1,000,000	100	do pfd	$1¾Q	Sept. 30,26	.....	.....	.....	.....	.....	.....
31½	21⅜	25⅞	19¾	34,914,280	10	Continental Oil	25cQ	Sept. 15,26	17,700	20	20	†19¾	19⅜	— ⅜
17½	10	17	13½	1,500,000	25	Crescent Pipe Line	.....	Sept. 15,23	.....	.....	.....	.....	.....	.....
156	132	137	107½	3,000,000	100	Cumberland Pipe Line	$3Q	Sept. 15,26	110	108	109½	108	109½	+1½
96	61	63¾	43½	5,000,000	100	Eureka Pipe Line	$1Q	Aug. 2,26	150	45	45	†43½	43½	—3½
68½	23¼	32½	9⅞	16,000,000	100	Galena Signal Oil	.....	June 30,25	1,400	14	14	† 9⅞	10¾	—3¼
105	88	94½	40	4,000,000	100	do new pfd	.....	June 30,26	140	41	42	†40	42	+1
114	95	97¾	52½	2,000,000	100	do old pfd	.....	June 30,26	120	60	60	†52½	52½	—7½
95	42¾	68¼	53½	72,916,650	25	Humble Oil & Refining	30cQ	Oct. 1,26	8,600	57¾	57¾	54½	55¾	—1⅜
154½	127	144½	131	20,000,000	100	Illinois Pipe Line	$6S.A.	June 30,26	150	135	135	134⅝	134⅝	— ⅛
39¼	27¼	38¾	31½ sh	6,491,852	N.P.	Imperial of Canada	25cQ	Sept. 1,26	9,300	36⅛	36⅛	35	35	—1
84	57⅜	70	58 $	5,000,000	50	Indiana Pipe Line	$1Q	Aug. 14,26	100	60	60	59	59	—1½
35⅜	22⅜	35¼	28¾ sh	7,118,138	N.P.	International Petroleum	25cS.A.	Aug. 15,26	30,800	32⅜	32½	30½	30¾	—1⅝
25⅜	16½	20⅝	18⅜ $	6,362,500	$12½	National Transit	25cQ	Sept. 15,26	300	13⅝	13⅝	13½	13½	— ⅛
79	49¼	51⅞	30½	5,000,000	100	New York Transit	.....	July 15,26	150	31	31	†30½	30½	—1
88	67½	80½	66	4,000,000	100	Northern Pipe Line	$3S.A.	July 1,26	100	67½	67½	†36	66	—2
75¾	60¼	67⅜	55¾	60,000,000	25	Ohio Oil Co	50cQ	Sept. 15,26	5,700	58½	58½	57⅛	58	— ½
44½	19	24¾	15	10,000,000	25	Penn Mex Fuel	.....	May 21,25	300	17⅜	17⅜	16⅝	16⅝	—1⅜
65½	45⅞	60¼	48	60,000,000	25	Prairie Oil & Gas	50cQ	Aug. 31,26	8,000	51¼	51¼	49¾	50¾	+ ½
129¾	106	127½	122¼	81,000,000	100	Prairie Pipe Line	$2Q	July 31,26	950	124¾	124¾	123¾	124	0
254	200	220	184½	4,000,000	100	Solar Refining Co	$5S.A.	June 19,26	150	203	203	195½	197	—6½
103	63	74½	24	10,000,000	100	Southern Pipe Line Co	.....	Mar. 1,26	300	24½	24½	†24	24	— ⅝
47½	45	50	34½	20,000,000	25	South Penn Oil Co	37½cQ	Sept. 30,26	1,100	37½	37¾	35⅝	36	—1½
84	50	56	49	3,500,000	100	South West Pa. Pipe Line	$1Q	Oct. 1,26	50	51	51	51	51	— ½
70¾	59½	70½	61½ $	223,756,258	$25	S. O. Indiana	62½cQ	Sept. 15,26	19,500	63⅛	63⅛	62	62⅛	— ¼
46	30⅝	36½	19⅝	8,000,000	25	S. O. Kansas	.....	June 18,24	5,300	20½	20½	20	20	— ½
137	114¾	134¾	108	16,864,434	25	S. O. Kentucky	$1Q	Sept. 30,26	2,300	121	121	118⅜	118¾	—2¼
.....	.....	51⅝	42	4,518,000	25	S. O. Nebraska	63cQ	Sept. 20,26	1,800	45½	45½	44	44⅛	—1⅞
48⅝	40¼	47¼	30⅜	358,102,000	25	S. O. New York	40cQ	Sept. 15,26	33,200	31⅞	32	31	30⅞	—1
369	338	362	290½	14,000,000	100	S. O. Ohio	$2½Q	Oct. 1,26	1,110	295	295	290	293	—3
123	116	122	117	7,000,000	100	do pfd	$1¾Q	Sept. 1,26	70	119	119	119	119	— ¾
27	12	23	15¼	1,722,931	25	Swan-Finch Co	.....	Nov. 1,19	550	17	17	†15¼	16	—1
109½	80⅜	112	94½	61,919,950	25	Vacuum Oil Co	50cQ	Sept. 20,26	7,800	97½	97½	†34½	95	—2½

Wall Street Expects Oil Company Financing

NEW YORK, Oct. 9.—Considerable financing by oil companies is expected this year for the reimbursement in part of company treasuries for capital expenditures of the last few years. The Wall Street Journal has the following to say on this subject:

"Oil banking circles will not be surprised if several important oil companies arrange for additional funds during the rest of the year in order to make partial reimbursement to treasury for the huge sums spent for capital account.

"The last several years have seen considerable concentration in the various departments of oil, due to tremendous expansion of a relatively small number of companies. This expansion has been accomplished both by acquisition and development of properties and with few exceptions has been handled without resort to stockholders or the public for funds.

"In the main this expansion has been met out of surplus earnings and the use of reserves. These have proved sufficient to take care of new capital needs to date and there has not been any general bank borrowing movement to provide money needed.

"What is thought a likely development is a resort to shareholders to subscribe to additional stock at prices which will make such privilege of tangible value. What with excellent oil earnings and the fact that the industry generally is on a dividend basis, such a step probably will meet with success."

New York Curb Market

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions week ended Oct. 8 Sales	First	High	Low	Last	Ch'ge
11½	2½	14½	4¼	$ 5	Amer. Maracaibo	7,000	5	5¼	†1¼	4¾	— ⅜
8⅜	5	8¾	5¾	$10	Arkansas Nat. Gas	1,900	7¼	7⅝	7⅛	7½	+ ⅜
.....	.....	19¾	14⅜	N.P.	Beacon Oil	5,500	18	18½	17½	18¾	+ ¼
47½	38	.....	.....	$25	British-American	.....	.....	.....	.....	.....	.....
10¼	2¾	22⅞	9¼	25c	Carib. Syndicate	45,000	16⅝	17⅞	16⅝	17⅜	+ ¾
43	35	45¼	37½	$20	Cities Service	12,500	45	45¼	45	45⅛	— ⅛
85⅜	80¼	89⅝	82⅜	100	do pfd	2,800	89½	89⅝	89⅜	89½	+ ⅛
8	7¼	7⅞	7⅜	10	do pfd. B	200	7⅞	7⅞	7⅞	7⅞	+ ⅛
21⅜	17⅜	22½	19	10	do bankers' sh	100	22½	*22½	22½	22½	+ ⅛
2¾	.60	3½	2	N.P.	Colombia Syndicate	13,500	2⅛	2¼	2⅛	2¼	0
15	8¼	16	10	N.P.	Creole Syndicate	21,100	14⅜	14⅝	13½	13⅝	—1
12¼	5	7⅜	1⅜	N.P.	Crown Central	2,600	1⅝	1⅝	1¼	1¼	— ⅜
7	2	4	1⅞	N.P.	Derby Oil & Ref	.....	.....	.....	.....	.....	.....
27	10½	19	13	N.P.	do pfd	.....	.....	.....	.....	.....	.....
.....	.....	2¼	.88	.....	Euclid Oil	12,800	1⅜	1½	1⅜	1⅛	— ⅛
6	1⅜	7½	3⅛	N.P.	Gibson Oil	17,700	3⅝	3⅝	† 3⅛	3¼	— ¼
3¾	1⅜	2	.63	N.P.	Gilliland v.t.c	.....	.....	.....	.....	.....	.....
98¼	63½	95	82	$25	Gulf Oil Corp	4,800	92¼	92¼	90	90½	—2
5⅞	2¼	4	1⅜	N.P.	Kirby Petroleum	800	1⅝	1⅝	1½	1⅜	— ⅛
13	6	12¼	5¾	N.P.	Leonard Oil & Dev	3,700	8⅛	8⅛	7¾	7¾	— ⅜
25⅞	18	25¾	20	N.P.	Lion Oil Refining	6,300	21¼	21¾	20¼	21⅛	— ¼
.....	.....	46	31½	$25	Lone Star Gas	900	43	*46	43	44	+3¼
4½	1¾	3¾	2	N.P.	Marland of Mexico	.....	.....	.....	.....	.....	.....
5¾	.56	5½	2⅝	$10	Mexican-Panuco	18,300	3½	3½	3	3⅛	— ⅜
2	1	1¾	1⅜	1	Mountain & Gulf	.....	.....	.....	.....	.....	.....
26¼	18¾	26	23	10	Mountain Prod	2,600	23¾	24	23¾	24	+ ¼
6¾	3⅝	6¾	5⅜	5	New Bradford	500	5½	5⅝	† 5⅜	5½	0
24¾	16¼	11¾	2	10	New England Fuel	.....	.....	.....	.....	.....	.....
19⅜	6¼	17	9⅛	1	New Mex. & Ariz	1,000	11	11	10¼	10¼	— ¾
12½	8¼	17	8	25	New York Oil	200	9⅛	9⅛	9⅛	9⅛	+ ⅛
37	14	36	34¼	25	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
.....	.....	9⅞	6¾	.....	Pandem	3,200	6¼	6¾	† 6¼	6¾	0
2½	.90	2¾	.50	N.P.	Peer Oil Corp	.....	.....	.....	.....	.....	.....
28¼	16	22¾	13¾	$10	Pennok Oil	1,400	14½	14½	†13¾	13⅞	—1⅛
44½	16	38	14⅛	25	Red Bank Oil	.....	.....	.....	.....	.....	.....
33½	19	28¾	14½	N.P.	Reiter-Foster	6,600	16¾	16¾	15	16¼	— ¾
.....	.....	27½	26¼	$25	Richfield Oil w i	.....	.....	.....	.....	.....	.....
9½	3½	7⅜	4⅝	N.P.	Ryan Consolidated	300	5½	5½	5½	5½	+ ¼
9¾	6⅜	10	8	$10	Salt Creek Cons	1,300	8	8⅛	8	8	— ¼
35	24	36	28⅞	10	Salt Creek Prod	2,800	30½	30⅝	29¾	29¾	— ⅛
3⅞	1	4	1⅜	5	Savoy Oil	.....	.....	.....	.....	.....	.....
13¾	9	25	7¾	10	Tidal Osage	5,800	18½	21½	18½	21½	+2½
10⅞	8	22⅞	8¼	10	do non-voting	4,000	17¼	18¾	17¼	18½	+1½
.....	.....	27	21	N.P.	Tide Water Assoc	7,400	22⅝	22¾	22	22	— ¾
.....	.....	99¼	97½	100	" " " pfd	2,700	97½	97½	97½	97½	0
4⅞	1¾	8	4¼	5	Venezuelan Pet	9,300	5	5¾	5	5½	— ¼
.....	.....	29¾	23½	N.P.	Warner-Quinlan	1,100	26¾	26¾	26	26½	— ¾
31¼	22½	36⅛	22	N.P.	Wilcox O. & G new	1,500	28	28½	27	27	—1½
7	3⅞	9½	4⅜	$1	Woodley Petroleum	1,500	8⅜	8⅜	7⅜	7¾	— ⅜

*New High †New Low xEx-Dividend.

First Barnsdall Corp. House Publication Is Off The Press

TULSA, Oct. 7.—The Barnsdall Corp. has entered the ranks of house organ publishers. Its first issue of the new monthly magazine Barnsdall for the corporation's employes has just come off the press. E. B. Reeser, Jr., son of the president, is editor. He has had considerable newspaper experience in Tulsa and in the east.

The first number has a picture of Theodore N. Barnsdall, one of the founders of the company, on the cover. A brief history of Mr. Barnsdall's activities is carried in the magazine.

"Mr. Barnsdall had the distinction of having drilled the second oil well ever drilled and of building the first real oil refinery, it is stated in the article. "Not content with being a successful producer, Mr. Barnsdall sold a one-eighth interest in his well to William H. Abbott for $10,000 and engaged in the refining business as well. He opened up what has been called the 'one and only sure thing' among oil pools—the Bradford field—in the area of which a dry hole was never drilled."

The magazine contains 16 pages. In addition to the article regarding Mr. Barnsdall, there are others with the following titles, "Coal Oil Johnny Has a Birthday," "Simple Lessons in Oil and Gas Law," by John H. Brennan, chief counsel, "Waite Phillips Purchase Justified," "How to Untangle the Calendar" by Edward M. Skeehan, general auditor," "Fatalities Take Heavy Toll," "New Insurance Is Effective," "Did You Know That ——?," and departmental notes.

Method Needed To Gauge Small Fuel Tanks

ST. LOUIS, Oct. 8.—Oil companies that market distillate to consumers who have the lower priced oil burners, see the need for some method of accurately gauging the 250-gallon underground fuel tanks that are sold as part of the installation, according to C. C. Cherbonnier, who operates the St. Louis Gasoline & Fuel Co.

Mr. Cherbonnier finds some of these tanks hold more than 250 gallons and the consumer is inclined to think the oil company has short-measured him rather than that the tank will hold more than 250 gallons. On the other hand, sometimes the tanks hold fewer than 250 gallons and the truck driver has to watch against overflowing the tank if he tries to make a dump into them from 250-gallon compartments of his truck tank.

LEWISBURG, PA.—J. F. Reber & Co., with headquarters here, is now equipped to handle fuel oil in tank car lots, according to J. F. Reber, proprietor.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

Sludge Acid Recovery. Man thoroughly familiar with construction and operation, bottles to hot air concentration, desires connection. Box 685.

WELL EDUCATED YOUNG MAN, 26, splendid personality, making life work of Petroleum. Wants opportunity to get into Foreign work. Not particular about kind of work, providing it brings me in contact with oil. South America preferable. Box 710.

EXPERIENCED OIL REFINERY DESIGNING AND MECHANICAL ENGINEER WANTED. Address Box 706 care this publication.

GRADUATE CHEMIST; married; nine years' experience in oil refineries; light and heavy oils including lubricating oils. Available at once. Box 711.

Situations Open

SALESMAN WANTED — Rapidly growing refining company now selling full line of barreled lubricants and highly specialized gasoline, requires energetic, experienced salesman, who has record of business-getting with high grade merchandise from prospective filling stations, jobbers and smoke stack trade. One who can fully appreciate that his own and the company's success depends largely on himself. Write fully, activities for number of years, age, photo if possible, and where qualifications may be checked up without affecting strictest confidence. Salary expected to start. Southwest Missouri territory. Box 712.

GREASE MAKER WANTED

St. Louis. In reply give experience and qualifications, technical training and salary expected.

Address Box 709

CHEMISTS WANTED

We have openings in our Laboratory for chemists who have had oil refinery experience. Want one man with considerable general oil refinery experience; one man with lubricating oil experience and two with experience in minor positions. In answer give full details: age, education, experience, salary expected, etc.

Roxana Petroleum Corporation, Wood River, Illinois.

Business Opportunities

PETROLEUM PRODUCTS BOUGHT ON COMMISSION

Make this office your Tulsa buying office on a commission basis.

Let's Exchange References

DALE W. MOORE

532-533 Mayo Bldg., Tulsa, Okla.
Telephones: 3-4177 and 3-4178
L. D. 136

Wanted—To Buy

FILLING STATION WANTED

With Tank Car Unloading Facilities. Give Full Particulars.

Box 705

6 INCH PIPE WANTED

7,000 to 8 000 feet 6 inch pipe and Standard Fittings. Quote F. O. B. New Orleans.

Address: "Pipe," Room 916, 342 Madison Ave., New York City

For Sale

BULK STORAGE PLANT FOR SALE

Located in Cleveland on Big Four R. R. Fireproof building contains 14,000 sq. ft. Land one acre. Outside tankage, compounding tanks. Close to depots. Ideal oil plant. Box 703.

TANK TRUCK FOR SALE

2½-3½ ton Atterbury combination tank and platform truck. 600 gal., 3 compartment tank complete with can box and side racks. 6 Barrel platform between tank and cab. First class condition throughout.

BEARDSLEY & MURPHY, INC.
Batavia, N. Y.

IF YOU ARE LOOKING FOR A BARGAIN IN USED EQUIPMENT,

tell our 14,500 oil industry readers about it. Some of them are sure to have just what you need, and a classified advertisement costs very little.

Miscellaneous

WHAT IT COSTS

For "Position Wanted" advertisements—5 cents per word. Minimum cost $1.00. All other classified advertising—10 cents per word. Minimum cost $3.00. Advertisements set in special type or with border—$4.00 per column inch. Copy must reach us not later than Friday preceding date of issue
All advertisements carried on this page are payable in advance.

Advertisers having box numbers should be addressed in care of National Petroleum News, 817 Huron road, Cleveland, Ohio, unless otherwise specified.

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